

**THE COMPREHENSIVE SCHOOL SCREENING PROGRAM  
IN ABU DHABI SCHOOLS 2015-2018:  
THE CHALLENGES AND OPPORTUNITIES**

by  
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## **Abstract**

The Comprehensive School Screening Program is part of the Preventive Screening for children launched by the Health Authority of Abu Dhabi (HAAD) in collaboration with the Abu Dhabi Education Council (ADEC) in the academic year 2010-2011. Early recognition of health problems in children positively contributes to their development and functions throughout their life and helps them reach their full potentials without the burden of disability or illness.

Comprehensive school screening programs include dental screening, vision test, hearing test, body mass index, blood test for anemia, in addition to physical examination for spinal curvature (scoliosis). The Comprehensive Preventive Screening Program in the Emirate of Abu Dhabi in public schools screened a total of 27,983 students in the 2015-16 academic year, an increase of 0.9% pupils from the previous year (27,736 in 2014-2015), and increasing from Academic year 2013-2014 when a total of 26,948 students were screened. This shows that the uptake of the screening program continues to increase (HAAD Surveillance Section).

Objectives of this dissertation: This study addresses the available data from the comprehensive school screening from 2015 to 2018 to assess the trends of health findings in children and to determine if there is any significant variation between UAE national children and other residents (non-citizens) in Abu Dhabi. How have those trends changed over the last three years? The study will also determine the effects of specific interventions implemented by HAAD and other stakeholders to improve the health of students.

The first contribution of this dissertation is using the data to deepen our understanding and insight of the health challenges facing our students in Abu Dhabi. The second contribution is serving as a catalyst for improving the screening, early detection, health education and interventions. The third contribution is to highlight the need for a more comprehensive and an all-inclusive model for school screening with equal access to all school children.

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## **Dedication**

This dissertation is dedicated to my parents, my family, my children and all the precious children of Abu Dhabi and UAE; with lots of love.

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## **Chapter 1**

### **Introduction**

Preventive services and health promotion programs are essential to promote the health and well-being of children and adolescents. It has been demonstrated that healthy students do better academically, according to the Centers for Disease Control (CDC) website on Adolescents and School Health “Health-related factors such as hunger, physical and emotional abuse, and chronic illness can lead to poor school performance. Health-risk behaviors such as early sexual initiation, violence, and physical inactivity are consistently linked to poor grades, test scores, and lower educational attainment” (Adolescents and School Health, CDC, n.d.

[https://www.cdc.gov/HealthyYouth/health\\_and\\_academics/](https://www.cdc.gov/HealthyYouth/health_and_academics/)).

In turn; Many academically gifted students still have health and mental health challenges or issues with trauma. “Academic success is an excellent indicator for the overall well-being of youth and a primary predictor and determinant of adult health outcomes. Leading national education organizations recognize the close relationship between health and education, as well as the need to foster health and well-being within the educational environment for all

students.” (Adolescents and School Health, CDC, n.d.

[https://www.cdc.gov/HealthyYouth/health\\_and\\_academics/](https://www.cdc.gov/HealthyYouth/health_and_academics/)). Also, a whole school approach framework of Health Promoting Schools (HPS) is thought to be effective to improving health. This model depends on a holistic approach that looks at the school as a microcosm of the students’ outside communities where more control can be exerted on the environment. Those schools not only implement health promotion programs, but also make the healthy lifestyle choices easier in the school environment by enacting supporting policies and standards (Lee , 2009).

This holistic model is what HAAD based its Schools for Health program which covers multiple health promotion programs focusing on healthy lifestyle and goes hand in hand with comprehensive school screening.

### **1.1 The HAAD *Enaya* (the Arabic word for Care)**

This program was launched to address preventive services to improve the health of mothers and their children aged 0-18 years. It includes in addition to health promotion programs (like Schools for Health and “Eat Right - Get Active” program, or ERGA) a continuum of preventive screening from preconception care, antenatal care, newborn screening, well-child screening and school screening. (Figure 1)

### **1.2 The School Screening program**

The HAAD Standard on School Screening (ver. 0.9) was released in 2010. The screening standard was based on an extensive evidence review and tailored to fit the school setting and local culture (Standard for comprehensive school screening, HAAD, 2010).

[https://schoolsforhealth.haad.ae/media/27282/haad\\_school%20screening\\_ver1.pdf](https://schoolsforhealth.haad.ae/media/27282/haad_school%20screening_ver1.pdf).

The purpose of school screening is to identify as early as possible children who have early signs of health problems. Unfortunately the current school screening in Abu Dhabi does not cover the essential elements related to mental health and early detection of substance abuse. School screening can help identify disease conditions that students may have, even if they look and feel well. Early detection makes early treatment and better control of the condition possible. Early treatment can prevent the risk of future serious health problems and limit the impact on their education (e.g., picking up hearing issues early can limit associated learning and developmental issues) (Winston-Gerson, 2016).

Based on the HAAD Standard, the public school comprehensive screening program was launched by the Abu Dhabi Education Council (ADEC) in 2010 to provide screening to all students in Public Schools. The screening is provided by Ambulatory Health Services (AHS) through AHS Primary Care Centers and Mobile Units, in line with HAAD screening guidelines. The program screened around 30,000 students in Grades 1, 5 and 9 in public schools

of the Abu Dhabi Emirate in the Academic year 2015-2016. Some private schools had also implemented the school screening program and the services are provided by multiple health care providers.



Figure (1) Source is Maternity and Child Health Section. HAAD

### **1.2.1 School Health Program Objectives**

The School Screening Program aims to promote the health of students and identify any issues as early as is possible to correct or treat them and thereby enhance their academic potential.

The objectives of the comprehensive preventive screening program are to:

- Identify students with undiagnosed illnesses, including issues related to weight, vision, anemia, scoliosis and hearing impairment
- Alert parents/guardians to address their children's health risks
- Provide guidance to parents regarding adopting a healthier lifestyle
- Plan and implement national health promotion campaigns/initiatives based on the screening results.

## **Chapter 2**

### **Literature review**

#### **2.1 General review**

School-based health measurements can accomplish many useful objectives including surveillance to identify the student population at risk of specific diseases or risks and planning for targeted interventions. It also serves the purpose of screening for specific problems and sharing the information with the students and their parents to ensure early treatment and avoidance of



complications. However, school screening is also costly and more effective ways may be available (School Based Health Screening best practices, New Nouveau-Brunswick, 2013). The results of the screening may also cause unnecessary stigmatization of some students with psychological impacts of stigma on their personal and academic development. It may also lead to unhealthy and eventually harmful behaviors like yo-yo dieting or food fads (Nihiser et al., 2007).

Several cost effectiveness studies are available to provide cost-effectiveness data related to some school screening tests like hearing and vision screening, but there is very limited data on the cost effectiveness of a multifaceted comprehensive school screening that brings several screening tests together. For comprehensive school testing no available data exist on the collective cost effectiveness of all tests combined. In addition, in some screening programs like dental screening there are multiple studies but large randomized controlled (definitive) studies are limited in number and the sample sizes are not large enough in some of them. The need for a large randomized controlled studies with sufficient sample size and a no screening arm is still required in addition to follow-up studies to assess the differences in dental health outcomes between the screened group and the control and the cost effectiveness of these studies (Joury et al., 2016).

The PubMed search did not identify any studies that have compared local students' results compared to expatriates in other countries in comprehensive school-based screenings. Most studies compared students based on ethnic descent. There was one study in the Australian literature that compared the native Australian Aboriginal population children in remote communities with other students in selected parameters like BMI (Schultz, 2012)

School-based screening programs varied greatly from country to country and showed variation even within one country from state to state or province to another; this is also the same in UAE, where Abu Dhabi (AD) is to date the only Emirate that has thus far implemented the full comprehensive school screening even though it is not yet covering all children in private school settings.

Many countries have multiple programs that cover some of the tests included in the AD comprehensive school screening; for example, the UK has its National Child Measurement Program (NCMP) which collects height and weight and measures the BMIs of school children in the Reception year (4 to 5 years old) and year 6 (10 to 11 years old) pupils. This is mandated in the schools maintained by the Government while it is encouraged for independent schools and schools for children with special needs. This program started in 2005-2006. It now has a solid ten years reliable data and measurements on over a million children annually. Public Health England oversees the program and local authorities deliver and implement it. De-identifiable data are available for

academia and researchers on-line. The reported BMI data also look into relations to ethnicity, deprivation and rurality (public health England.2013.

<https://www.gov.uk/government/collections/national-child-measurement-programme> )

In the United States many states had enacted Act 1220 aimed at addressing childhood obesity, which mandates measuring BMI in relation to their age percentile in all public schools and communicating the results back to their parents. Despite the adoption of this act in 13 or more states, there is still limited evidence that this measurement intervention has any effectiveness in reducing future tendency towards overweight or obesity. Nor can these data be linked to future changes in physical activity and diet choices. More research is still needed.

Different states enacted the Act 1220 in different years and their implementation of the Act also varied from state to state. There are many concerns related to the impact of these measurement programs on the children's' social life and general behavior. Measuring BMI for surveillance purposes (i.e., estimating the percentage of school children that are overweight or obese) is widely accepted. But when it is implemented for screening purposes where the BMI of individual students is measured and reported to parents, multiple concerns arise that must be addressed. These include parents' perceptions of the results and their concerns regarding their child's reaction to

the results reported and to stigma attached to labeling a child as overweight or obese in his/her school (Nihiser, 2007).

In the United States, a study published in 2011 by Basch stated that “more than 20% of school-aged youth have some kind of visual problems, based on a nationally representative sample of more than 48,000 youth under age 18”. According to the same study, the assessment of visual problems may have a negative impact on academic achievement and social adjustment to their school environment. Vision screening programs are widespread in US schools but they are still facing major challenges, including financial issues, the availability of qualified human resources, and follow-up and management options (Hark et al., 2016). Vision screening in Abu Dhabi for school children has always been a routine practice by school nurses back to the 1980’s in all schools owned by the government. During my school years the testing of visual acuity through the vision testing charts was taking place on a yearly basis but the follow-up of suspected outcomes has always been a problem. Abu Dhabi continued to test the visual acuity of schoolchildren yearly in all governmental and many private schools. The current system in the private schools grew stronger and referral strategies improved but the private schools still lag behind. The enforcement and audit arms of the comprehensive screening programs in Abu Dhabi are still weak and require strengthening. In Dubai there is a growing pressure to start a vision screening program in schools as a recent cross-

sectional study reported that about 38.9% of 316 randomly selected students between 6-11 years from Dubai schools had refractive errors. This is much higher than the previously reported figure of 9.4%. Overall, 31.6% were myopic (Al Faisal et al., 2017).

Hearing loss in infants and children has been linked with long term problems in speech and language development, low academic performance, social development delays and emotional difficulties (Sharagorodsky et al., 2010). Even though many children with hearing loss get detected in the newborn period after the introduction of neonatal hearing screening in Abu Dhabi, it is known that hearing loss can develop after that period. Many reasons can lead to hearing problems in children including infections, trauma and medication. Hearing testing in a school setting is common in many countries but lacks standardization and consistency. The access to appropriate medical care and follow-up after the detection of a hearing problem in a school age child is also variable. It is estimated that around 1% of children by school age will have some permanent hearing loss in one or both ears (Sharagorodsky et al., 2010).

Mental health school-based screening is an element that has been considered in Abu Dhabi for the last 4 years. Based on the reports of the WHO Global School-based Students Health Survey 2010, the percentage of students who had seriously contemplated suicide over the last 12 months was 15.5 %. Those who reported that they actually attempted suicide at least once over the

last year reached 12.6 % of 2581 students from public and private schools in the UAE between the ages of 13 and 15 years (WHO. Global School-based Students Health Survey 2010. <http://www.who.int/chp/gshs/en/>); However, this has not materialized until now due to multiple social, cultural and service availability related factors. School-based mental health screening and intervention programs exist in several countries like the USA, UK and Australia but it is still relatively new and not implemented universally in all schools (Faizal et al., 2014). School-based screening initiatives in regard to mental health problems have always been controversial and have raised ethical and practical concerns (Kratochwill, 2007). They include issues related to consent, stigma, data collection, confidentiality, availability of services, resources and cost effectiveness (Dowdy, 2010).

## **2.1 Special focus on Mental Health:**

“Mental health is a most important, maybe the most important, public health issue, which even the poorest society must afford to promote, to protect and to invest in.” (World Health Organization, 2003). A focused search was performed to look for specific country experiences in addressing mental health at schools. The countries were chosen according to the OECD Child Wellbeing first rankings in relevant elements. The relevant websites of the authorities for education and health were visited and appraised for child mental health activities. UNICEF Country performance across nine child-relevant Sustainable

Development Goals (SDGs) were reviewed and the highest achieving countries in both “Good Health and Well-Being” and “Quality Education” were also examined. (UNICEF, 2017.

[https://www.unicefirc.org/publications/pdf/RC14\\_eng.pdf](https://www.unicefirc.org/publications/pdf/RC14_eng.pdf)).

The following electronic databases were searched for child population-based mental health screening and relevant study titles were reviewed thoroughly.

1. WHO- World Health Organization mental health publications
2. CDC- Centers for Disease Control and Prevention
3. Cochrane Database of Systematic Reviews
4. US Preventive Task Force
5. NICE- National Institute for Health and Care Excellence

Iceland scored the second highest in “Good Health and Wellbeing”; the indicator of 11-15-year-olds self-reporting 2 or more psychological symptoms more than once a week (%). Iceland does not have a school based mental health screening , their model focused on promoting mental health and well-being through creating environments that enable self-reported psychological symptoms enable early intervention and reduce the likelihood of progressing mental disease (Nordic Center for Welfare and Social Issues, 2018).

Finland scored the highest in “Quality Education”. Upon searching the web for information on mental health; I found that besides placing mental health as an important component on the health policy agenda, Finland 10 years ago introduced an online portal that includes a questionnaire to determine whether users have mental health problems, along with a sign posting service to show people where to go for help.

The Mental hub Finland (**Mentalhub.fi.**) is funded by the Government, Hospital District in Helsinki and the Helsinki University Central hospital. It also provides self-help tools for those who do not need professional help. Four years ago, it started offering therapy courses with qualified mental health professionals for people with mild to moderate mood disorders. Anyone can access it but for therapy a referral is required. The hub also offers education, advice, consultation opportunities and advice for mental healthcare professionals, as well as various tools for measuring mental health (Nordic Center for Welfare and Social Issues, 2018).

Patients can access computer-assisted cognitive behavioral online therapies for depression, alcohol misuse and a wide range of anxiety disorders. They log on to watch videos and complete written exercises designed to highlight destructive behavior and how to avoid it. If they have questions or worries, they can message a mental health professional who will reply to them



with advice or encouragement. (Mental Hub Finland,n.d.

<https://www.mielenterveystalo.fi/en/Pages/default.aspx#> ).

The strategies were aimed at increasing resilience, social integration and creating safe environments. The initiatives focused on particularly vulnerable groups, including minority groups and young people. They also had a strategy for developing a prevention program in schools. The strategy is based on four cornerstones: psycho-educational programs; skills training; educational programs for key people, and a screening program.

For young people's mental health in Finland, school and student health services play an important role in the prevention and detection of mental health problems and in providing support. At all levels of education – from compulsory education to vocational education, colleges and universities – free well-established, extensive and continual services are offered for children and young people. Schools generally have counsellors, healthcare and nursing staff, psychologists, and sometimes even doctors, one or more days a week. Finland has also put in place targeted child and youth-based programs, including child welfare clinics and mental health education in schools. A large-scale program on bullying – the Kivaschool program – funded by the Finnish Ministry of Education, has been found to reduce self and peer-reported bullying and victimization. Forms of collaboration between the home and pupil healthcare staff have been developed. If the school's support is not enough, the case is

transferred to units with specialist expertise. In addition to the permanent pupil healthcare staff in schools and educational establishments, a series of support functions are offered through municipal services or by private service providers. Other important service providers are the child welfare clinics, the church, Folkhälsan and the Finnish Association for Mental Health and other third sector organizations. For some years, the Mannerheim League for Child Welfare has offered a telephone service to which children and young people from all over the country can ring for the price of a local call (Nordic Center for Welfare and Social Issues, 2018).

[https://issuu.com/nordicwelfare/docs/finland\\_webb\\_1\\_e=30952623/5456890](https://issuu.com/nordicwelfare/docs/finland_webb_1_e=30952623/5456890) ).

Regional variations in mental health service supply and delivery remain a challenge. However, Finland has responded to regional disparities by introducing innovative programs such as consultation via video link, which has been used to support primary care physicians in remote areas. There are also support services or, at least information, available online; for examples of online services/information aimed at young people. Religious organizations also offer support services. These services are free, and young people do not need to register to get help. For young people in employment, occupational health services support mental health and problem prevention (Nordic Center for Welfare and Social Issues, 2018).

[https://issuu.com/nordicwelfare/docs/finland\\_webb\\_\\_1\\_?e=30952623/5456890](https://issuu.com/nordicwelfare/docs/finland_webb__1_?e=30952623/5456890)

[0](#) ).

However; despite all the above, Finland does not have population-based screening program for mental health nor an all schools mental health screening program. They have opted to adopt education/awareness programs and training the teachers, social workers and other care givers on noticing children with trouble signs and then doing targeted screening and referring to appropriate services if needed.

WHO also does not have any recommendations supporting population screening for mental disease or school-based health screening programs for all students. However, there are many initiatives that focus on promotion and prevention interventions such as life skills training for children and adolescents and suicide prevention. The Mental Health GAP Action Program (mhGAP) and WHO's mhGAP Intervention Guide provides evidence-based guidance on the assessment and management of priority neurological, substance abuse conditions and mental health in non-specialist settings. WHO has developed a psychological intervention manual – Early Adolescent Skills for Emotions (EASE) - for 10-14 year-old adolescents in at risk environments with high distress and impaired functioning. This is designed to be delivered by trained non-specialist facilitators who are closely supervised to groups of adolescents and caregivers, who are living in adversity. EASE is currently undergoing

randomized controlled trial testing in four sites in Jordan, Lebanon, Pakistan and Tanzania (WHO.2018. [https://www.who.int/mental\\_health/maternal-child/adolescent/en/](https://www.who.int/mental_health/maternal-child/adolescent/en/) ).

WHO is also developing a digitally delivered psychological intervention to reduce impairing psychological distress experienced by adolescents aged 15-18 years old in urban environments. The project is called Sustainable Technology for Adolescents to Reduce Stress (STARS digital intervention). This will be the first available technology supported mental health intervention for adolescents that is available as a public good, evidence-based and designed for global use (WHO.2019.[https://www.who.int/mental\\_health/management/stars/en/](https://www.who.int/mental_health/management/stars/en/)).

In a US setting, the CDC is Monitoring Children's Mental Health but there is no recommendation for Nationwide school-based screening. The US Preventive Task Force after reviewing the evidence concluded that it is insufficient to recommend for or against routine screening of children or adolescents for depression. The USPSTF found limited evidence on the accuracy and reliability of screening tests in children and adolescents and limited evidence on the effectiveness of therapy in children and adolescents identified in primary care settings. (USPSTF.2016.

<https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummar>

[yFinal/depression-in-children-and-adolescents-screening1?ds=1&s=depression](https://www.nice.org.uk/guidance/ph12)

).

In the UK, the National Institute for Health and Care Excellence (NICE) does not recommend universal/mass/population child screening for any mental health issue. (NICE Guidelines, date). They focus on ensuring that primary schools adopt a comprehensive, “whole school” approach to children's social and emotional wellbeing. Where they put in place and evaluate coordinating mechanisms to ensure primary schools have access to the skills, advice and support they need to deliver a comprehensive and effective program that develops children's social and emotional skills and wellbeing in collaboration with local authorities and stakeholders, including parents and care givers. In general it focuses on children aged 11-14 years and specifically those who are known to live in disadvantaged circumstances or environments and who are showing early signs of anxiety, emotional distress or behavioral problems (NICE guideline on depression in children and young people.2008.<https://www.nice.org.uk/guidance/ph12> ).

In Ireland the role of schools is promotional and educational about mental wellbeing and identifying high risk cases which is responsibility of social worker then the clinical early detection is done at primary health care again the search does not mention population or school based all kids screening. (a vision for change.2006.

<https://www.hse.ie/eng/services/publications/mentalhealth/mental-health---a-vision-for-change.pdf> )

In Singapore also is frequently used to benchmark health care and preventative services in Abu Dhabi, there is currently no mental health screening program for school children (Ministry of Health.

Singapore.n.d.[https://www.healthhub.sg/live-healthy/365/health\\_screening\\_for\\_primary\\_school](https://www.healthhub.sg/live-healthy/365/health_screening_for_primary_school))

In Australia mental health is promotional and educational and is under the Ministry of Education (Ministry of Education, Australia.n.d.<https://www.education.wa.edu.au/mental-health> )

## **Chapter 3**

### **Methods**

#### **3.1 Aims of this study**

This study will analyze available data from the school screening program from 2015 to 2018 to assess trends of health conditions identified in children through school-based screening and to determine if there is any significant variation between UAE national children and other residents in Abu Dhabi. The parameters screened include BMI, vision, hearing, scoliosis, anemia and dental problems. But does not include mental health or substance abuse parameters.

The mandatory screening (BMI, vision) is done by school nurses in the school. In public schools and in a few private schools, the Comprehensive Screening Program is delivered by Ambulatory Healthcare Services through their Primary care centers and mobile units. The costs of the screening in public schools is covered by *Thiqa* insurance (comprehensive mandatory Health insurance for UAE nationals with very generous coverage for preventative and curative services) and expatriate children are covered by ADEC (in a governmental funded program). In 2014-2015, around 97% of the targeted students were screened from Abu Dhabi public schools. In the private schools it is not mandatory to do the school health comprehensive screening; for those who opt to do it, the screening tests are covered either by the relevant insurance product or for an affordable fee of 200 EAD (less than 50\$) paid by students' families. The majority of the public school students are UAE nationals while in the private schools most schools have a mix of national students and expatriates and are covered either by the relevant insurance product or a generally affordable fee. The study will also look into specific interventions implemented by HAAD and other school based stakeholders to improve the health of the students, like the ERGA program, and determine if it had any measurable impact on health outcomes of students.

### **3.2 Research Questions**

- Are UAE national children significantly different from other nationalities in their risk profiles? Are students in the private school system significantly different in their screening outcomes from their counterparts in Public schools?

It is important to find out if there are any differences in the measured parameters and the blood test results and what factors may be contributing to these differences. Trying to understand the factors contributing to the differences if any is crucial to design future interventions that are more specific and targeted.

- Did the trends of screening outcomes change over time? If yes, did they improve or are they getting worse?
- Did the HAAD initiated school-based health promotion program that is called Schools for Health which uses the slogan “Eat Right - Get Active” have an impact on the related parameters or do we need to reassess the current elements and further tailor them to be more effective?
- What are the current and future interventions adopted by the Abu Dhabi government to improve these childhood outcomes?

### **3.3 The Significance of this study**

No comprehensive local studies are available that look into the outcomes of the Comprehensive School Screening Program, especially the trends over several years in Abu Dhabi.



A PubMed literature search did not show any published studies on the topic above. (Search key words included “school health screening Abu Dhabi”, “childhood obesity in school children in Abu Dhabi”, “Abu Dhabi schools medical testing”, from January 2000 to January 2019).

This dissertation can be of a high academic and practical value and will be used by the HAAD public health team for policy review and public health programs future planning and development. It can also have a positive impact on SEHA Ambulatory Health Services organization and their School Health practices, especially in follow-up of suspected and confirmed cases.

### **3.4 Conceptual Framework and Hypotheses**

There are multiple factors that can influence the uptake and outcome of screening programs like the comprehensive school screening program. The conceptual framework for this dissertation mainly uses the example of the Health Behavior Framework (Bastani, 2010) which emphasizes the importance of understanding the multiple factors that influence and affect both the health problem and the health behavior, to be able to use multiple complementary approaches to achieve the required outcome.

In the case of comprehensive school screening in Abu Dhabi the conceptual framework (Figure 2) focuses on the importance of understanding the broad socio-ecological conditions that affect school children and their

families and addresses those that have an impact on children's uptake of the comprehensive school health screening. We should also understand the societal and system barriers that may impact students' access not only to screening but also to structured follow-up care when needed. The number of families opting to enroll their children in private schools' system is high; this is either based on their belief in the strengths of the private school system or due to restricted access to public schools as priority is given to UAE local students. According to the official website of Abu Dhabi Education council (ADEC) 200,000 students of which 50,000 are Emirati are registered in some 185 private schools in Abu Dhabi. (ADEC.

2017. <https://www.adec.ac.ae/en/Educators/PrivateSchools/Pages/default.aspx> ).

The comprehensive school screening as well as the accompanying health education and health promotion programs are widely established in the government schools but not all private schools have them in place yet which puts many students in a disadvantaged situation. It is also important to understand the possible links between these general conditions and the individual and specific family factors on the actual outcomes of the screening tests and whether they will follow through on the required interventions suggested and pursue getting the needed medical care for any diagnosed abnormalities or conditions. This understanding will also help in designing

multi-sectorial, multi-dimensional interventions and strategies to address the problems identified by the outcomes of the screening.

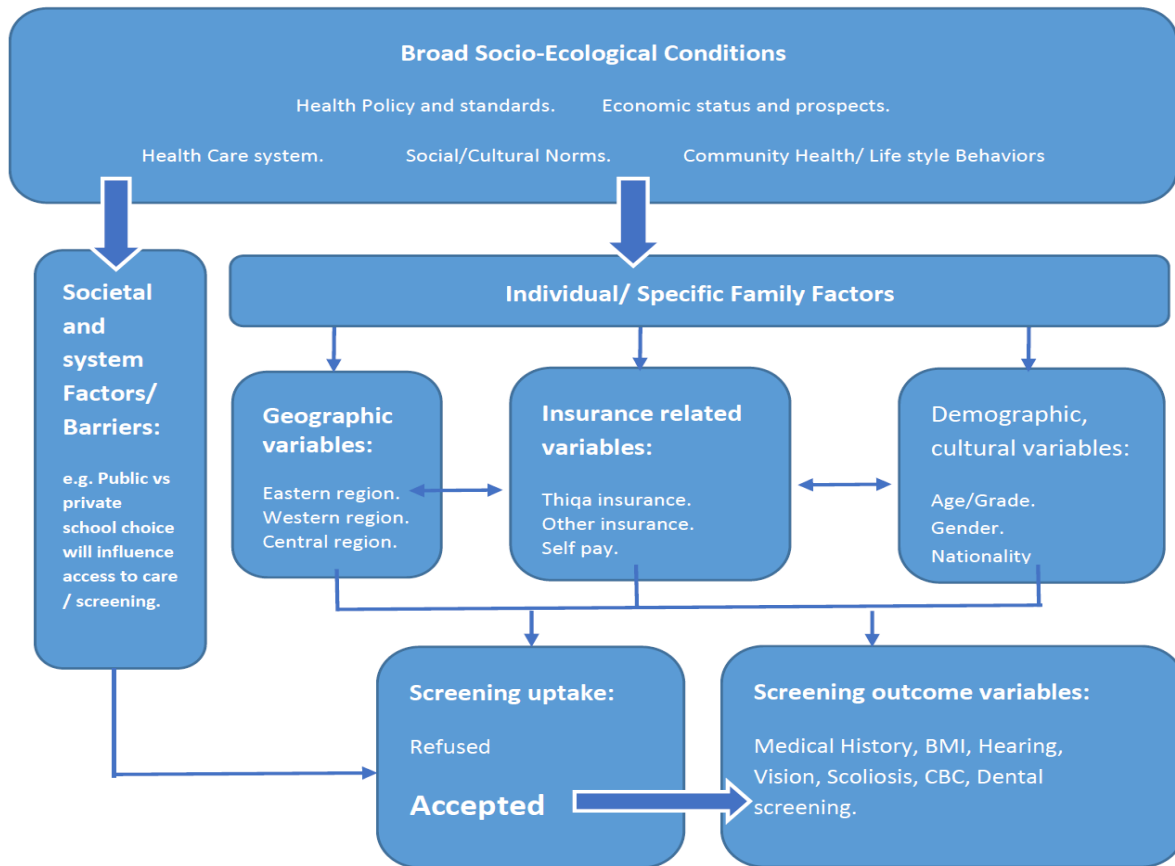


Figure (2): The conceptual framework for the dissertation.

I will explore three hypotheses in relation to each research question. The first is that the results for school children in Abu Dhabi are going to be very similar between the UAE nationals and the expatriate group as many of the expected problems of overweight or obesity or anemia are mainly lifestyle related.

The second hypothesis is that trends are likely to be either worsening or in the best case scenario stable given that public health interventions, even if already in place, require several years to show significant effects.

The third hypothesis is that even though we have some very good public health programs in place targeting school children, they will have to be improved and expanded and multi-sectorial collaboration is required.

The study is a retrospective analysis of the data available from the comprehensive school health screening program starting from 2015/2016 through the end of the Academic Year 2017/2018. The screening is itself cross sectional and children/schools are not randomized. The total number of students involved in the selected time period is 84,094 students (27744 in 2015/2016, 26878 in 2016/2017 and 29472 in 2017/2018). Around 20% are Expatriates.

The sources of data are HAAD electronic system for integrated school health screening results and may include the SEHA school health screening manually reported data; I will select whichever data source is more complete.

I will be comparing the UAE national students to the same age group (by grade) of expatriate students in Abu Dhabi Schools.

### **3.5 Types of Data analyzed**

Demographic variables include gender, grade, nationality and geographic region.

The following tests are done according to the HAAD Standard for School

Screening (Table 1):

Grade	1	2	3	4	5	6	7	8	9	10	11	12
Medical history <sup>M</sup>	√	*	*	*	√	*	*	*	√	*	*	*
(Z score values) BMI <sup>M</sup>	√	√	√	√	√	√	√	√	√	√	√	√
Vision <sup>M</sup>	√	√	√	√	√	√	√	√	√	√	√	√
Hearing <sup>R</sup>	√	*	*	*	√	*	*	*	√	*	*	*
Scoliosis <sup>R</sup>					√ (f)		√(f)		√(m)			
Physical Examination <sup>R</sup>	√				√				√			
Complete blood count <sup>R</sup>	√								√ (f)			
Dental screening <sup>R</sup>	√				√				√			

Key:

m: Male f:Female M:Mandatory R:Highly recommended \*:Screening only when clinically indicated.

Table 1: school screening tests performed in Abu Dhabi schools and the grades they are done at based on HAAD published standard for school screening.

### 3.5.1 Mandatory screening

All students from grade 1-12 are required to receive the following screening tests on an annual basis (Table 2). The school nurse at the school conducts the screening.

Grade	Screening test
1 – 12	Medical history Body mass index (BMI) Vision screening (eyesight test)

Table 2: Mandatory school screening. Based on HAAD published standard for school screening.

### **Visual Acuity screening**

School children are screened for myopia (shortsightedness) every year.

The child is required to read off a chart, from a predetermined distance, to check his/her eyesight. If the results show that the child may be shortsighted, the parent will receive a referral letter asking them to take him/her for a follow up visit. Even though the students are screened yearly for vision impairments, they are not given access to free eyeglasses.

### **Body Mass Index Measurement**

The height and weight of the child are checked to see if he/she is growing well. Growth charts are used to compare the height and weight with those of other children of the same age. If the child's growth rate is not within the normal range, the parent will receive a referral letter asking him to take him/her for a follow up visit.

### **3.5.2 Comprehensive Screening Program**

In addition, schools are highly recommended to provide the comprehensive screening program to their students (Table 3) . The screening does not include mental health screening or substance abuse early detection , it includes:

Grade	Screening tests
1	Hearing screening Medical checkup by doctor Blood test to screen for anemia Oral health screening
5	Hearing screening Medical checkup by doctor Oral health screening
9	Hearing screening Medical checkup by doctor Blood test to screen for anemia (girls only) Oral health screening

Table 3: optional but highly recommended screening components. Based on HAAD published standard for school screening.

If the child joins the screening program for the first time, all catch-up screening tests are performed.

In addition, the school nurse will give health promotion guidance to students on topics including nutrition, physical activity, preventing injuries, smoking prevention, oral health and mental well-being.

## **Hearing Screening**

The child is asked to put on earphones and his hearing is tested with an audiometer. He is then asked to indicate on a chart when he hears a sound in each ear. If he cannot hear all or some of the sounds, the parents will receive a referral letter asking them to take him for a follow up visit.

## **Medical Checkup by the doctor**

Health conditions checked by the doctor includes:

- Heart defects
- Slow growth
- Other developmental problems

It is important that the parents inform the school nurse of any health problems the child might have so that the condition can be reviewed. If any health conditions are detected, the parents will receive a referral letter asking them to take the child for a follow up visit.

## **Blood tests to screen for Anemia**

A blood test is done in Grade 1 for girls and boys and repeated for girls in Grade 9. If any health conditions are detected the parents will receive a referral letter asking them to take the child for a follow up visit.



## **Oral Health Screening**

The child will get an oral health checkup and advice on oral health conditions. If problems are detected or if the child needs some additional preventative care (e.g., fissure sealant to prevent tooth decay) the parents will receive a referral letter asking them to take the child for a follow up visit.

### **3.6 Study and Data limitations**

- The study is cross-sectional as it is based on a predesigned program targeting grades 1, 5 and 9 and is not randomized and the number of national students is much larger than their expatriate counterparts.
- The Comprehensive Screening Program is not active in most private schools
- Many expatriate students' medical insurance at the private schools does not cover the costs of screening, so parents have to pay out of pocket around 200 EAD and we have no studies that look into affordability or cost impact as a barrier for uptake among expatriate students.
- Electronic data integration for school health screening is not yet complete between the Health Authority of Abu Dhabi, SEHA Ambulatory Health Services and Abu Dhabi Education Council.
- Feedback from the schools indicates that many parents do not take their children for follow up appointments

- Some expatriate students are not covered for follow-up services
- The ratio of the school students to school nurse can be high especially in private schools which may impact the data accuracy
- Levels of overweight and obesity were estimated using pre-calculated Z scores formula to calculate individual student Z scores were used by nurses and reported as part of the collected data but could not be validated or cross checked during the period of the research.
- Comprehensive audit of data quality and accuracy is needed but is not taking place due to resource shortages.
- National students in the private schools may not get the screening even though they are covered.

## **Analysis**

Data were analyzed using the statistical package SPSS. Descriptive statistics were calculated. 95% confidence intervals were obtained for relevant variables. Only P values of  $<0.01$  will be considered statistically significant. For comparison of categorical variables, the Chi-square test was used.

## **Available data summary table**

The below table (4) lists the data available to me for analysis and the types of these variables in addition to the sources of data:

The variable	Type of variable	Source of data
<b>Grade</b>	Ordinal (1,5,9)	School health electronic notification system and School Health Manual Data reporting system
<b>Gender</b>	Dichotomous (M,F)	
<b>Region</b>	Nominal (Western, Middle, Eastern)	
<b>Nationality</b>	Dichotomous (National, Expatriate)	
<b>Height</b>	Continuous Numeric	
<b>Weight</b>	Continuous Numeric	
<b>(Z score) BMI</b>	Ordinal (under-weight, normal, overweight, obesity)	
<b>Anemia</b>	Ordinal (normal, mild anemia, moderate anemia, severe anemia)	
<b>Vision</b>	Dichotomous (normal, abnormal)	
<b>Hearing</b>	Dichotomous (normal, abnormal)	
<b>Scoliosis</b>	Dichotomous (deformed, no deformity)	
<b>Dental decay</b>	Dichotomous (Decay, No decay)	

Table 4: Available data on health screening, its types and sources.

### 3.7 Protection of Human Subjects

The data used is decoded and de-identified, even though data linking students to specific schools is available I have decided to avoid using school names to provide an extra layer of protection of students' identity. The primary investigator is the Director of Public Health in the Emirate of Abu Dhabi and

have full access to the data based on the fact that this program is a HAAD initiated program and using the data for evaluating the program and planning and designing future interventions is part of the normal duties of our Division. The research topic and access to data has been approved by the Health Authority Director General and an official request for Data access, the outcomes and policy recommendations are already included in the HAAD/Public Health strategic initiatives for 2019-2023.

## **Chapter 4**

### **Results**

#### **4.1 Demographics of the participants**

There were 84,094 students participated in this study. The demographic information collected included age, gender, nationality, region, grade, and screening time/school year are shown in (Table 5).

The participant's mean age was  $9.8 \pm 3.2$  years, 47.6% were boys, and 80.4% were Emirati. Nearly one-third (32.7%) of the participants were in grade 1, 34.8% were in grade 5, and 32.4% were in grade 9. Half of the participants (50.2%) lived in middle region and Abu Dhabi Island which was followed by eastern region (42.5%), and western region (7.3%); this basically reflects the population density in the three different regions. About one-third (35%) of the screening tests were performed in 2017-2018 school year, 33% in 2015-2016, and 32% in 2016-2017.

Table 5: Demographic characteristics of the participants (N=84,094)

	Number (%)
<b>Age (years)</b>	
Mean ± SD	9.8 ± 3.2
<b>Age category</b>	
Early childhood (5-8 yrs)	27868 (33.1)
Childhood (9-11 yrs)	28680 (34.1)
Adolescent (12-17 yrs)	27546 (32.8)
<b>Gender</b>	
Boys	40042 (47.6)
Girls	44052 (52.4)
<b>Nationality</b>	
Emirati	67631 (80.4)
Non-Emirati	16463 (19.6)
<b>Region</b>	
Middle region and Abu Dhabi island	42218 (50.2)
Eastern region	35746 (42.5)
Western region	6130 (7.3)
<b>Grade</b>	
Grade 1	27522 (32.7)
Grade 5	29299 (34.8)
Grade 9	27273 (32.4)
<b>Screening time/school year</b>	
2015-2016	27744 (33.0)
2016-2017	26878 (32.0)
2017-2018	29472 (35.0)

## 4.2 Clinical presentation of the participants

A minority (13.8%) of participants reported abnormal vision and only 7.7% wore eyeglasses/contact lens. Abnormal audiometry and suspected scoliosis were found in 5.1% and 2.1% of the participants, respectively. More than one-third (37%) of the participants reported no tooth decay/missing/filling (DMF). However, nearly half (43.5%) reported DMF (1-5), 14.1% reported DMF (6-10), and 5.1% reported DMF (>10). Regarding weight status, over half (62.6%) reported normal weight, 16.4% were obese, 15.2% were overweight, and only 5.7% were underweight (Table 6).

	Number (%) †
<b>Vision</b>	
Normal	72422 (86.1)
Abnormal	11593 (13.8)
<b>Corrective lens</b>	
None	77494 (92.2)
Glass/contact lens/others	6509 (7.7)
<b>Audiometry</b>	
Normal	79694 (94.8)
Abnormal	4272 (5.1)
<b>Scoliosis</b>	
Negative/none	82321 (97.9)
Suspected scoliosis	1769 (2.1)
<b>Tooth decay, missing, and filling (DMF)</b>	
0	31101 (37.0)
1-5	36604 (43.5)
6-10	11868 (14.1)

>10	4305 (5.1)
<b>Weight status</b>	
Normal	52678 (62.6)
Obese	13779 (16.4)
Overweight	12814 (15.2)
Underweight	4816 (5.7)

†Percentages may not add to 100 due to missing data

Table 6: Clinical presentation of the participants (N=84,094)

### 4.3 Laboratory test results of the participants

Normal hemoglobin level was found in 38.8% of the participants. Few (10.8%) reported low level of hemoglobin. Similarly, low hematocrit was found in a minority of participants (2.7%). Nearly half (42.9%) of the participants showed normal Red Blood Cell (RBC) and White Blood Cell (WBC). Less than a quarter (20.3%) showed low level of Mean Corpuscular Hemoglobin Concentration (MCHC). Regarding Red Blood Cell Distribution Width (RDWCV), normal level was found in nearly one-third (32.7%) of the participants and few (16.9%) showed high level (Table7)

	Number (%) †
<b>Hemoglobin status</b>	
Low	9114 (10.8)
Normal	32625 (38.8)
<b>Hematocrit status</b>	
Low	2270 (2.7)
Normal	39483 (47.0)

<b>RBC status</b>	
Low	168 (0.2)
Normal	36036 (42.9)
High	5546 (6.6)
<b>WBC status</b>	
Low	4807 (5.7)
Normal	36117 (42.9)
High	817 (1.0)
<b>Mean Corpuscular Hemoglobin Concentration (MCHC)</b>	
Low	17039 (20.3)
Normal	24420 (29.0)
High	260 (0.3)
<b>Red Blood Cell Distribution Width (RDWCV)</b>	
Low	108 (0.1)
Normal	27463 (32.7)
High	14176 (16.9)

---

†Percentages may not add to 100 due to missing data

Table 7: Laboratory test results of the participants (N=84,094)

Distribution of clinical presentation according to school year is shown in Figure 3 below. In the study period of 3 years, percentage of abnormal vision; abnormal audiometry; tooth decay, missing, and filling; and obesity decreased ( $p < 0.01$ ) from 2015 to 2018. However, percentage of suspected scoliosis increased ( $p < 0.01$ ). There was no significance changes regarding corrective lens needs (glasses/contact lens).



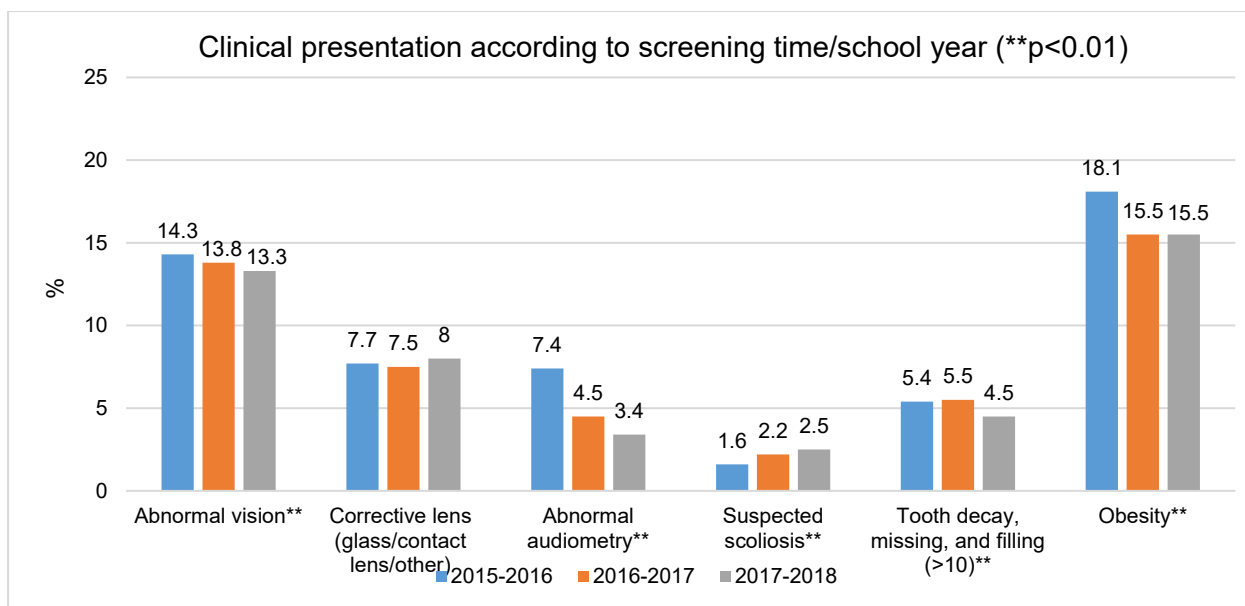


Figure (3): Clinical presentation according to screening time/school year (N=84,094)

#### 4.4 Association between clinical presentation and demographic characteristics of the participants

A more detailed examination of relationship between abnormal clinical presentation and demographic characteristics of the participants is shown in Table 8.

Results of chi-square analyses revealed a statistically significant age difference in terms of abnormal clinical presentation and it was more likely among adolescents who reported more abnormal vision ( $p<0.01$ ), wore glasses/contact lens ( $p<0.01$ ), more abnormal audiometry ( $p<0.01$ ), more suspected scoliosis ( $p<0.01$ ), more tooth decay, missing, filling  $>10$  ( $p<0.01$ ), and more obesity ( $p<0.01$ ). Statistically significant gender difference was also found in regards to abnormalities clinical presentation and it was more likely

among girls who reported more abnormal vision ( $p<0.01$ ), wore glasses/contact lens ( $p<0.01$ ), more abnormal audiometry ( $p<0.05$ ), more suspected scoliosis ( $p<0.01$ ), and more tooth decay, missing, filling  $>10$  ( $p<0.01$ ) whereas obesity ( $p<0.01$ ) was more likely among boys. Differences were also found in terms of nationality as some abnormalities were more likely among non-Emirati who reported more abnormal vision ( $p<0.01$ ), wore glasses/contact lens ( $p<0.01$ ), more DMF $>10$  ( $p<0.01$ ), and more obesity ( $p<0.01$ ). There was also a significant difference between different regions and it was more likely among participants in the middle region and Abu Dhabi Island who reported more abnormal vision ( $p<0.01$ ), more abnormal audiometry ( $p<0.01$ ), more suspected scoliosis ( $p<0.01$ ) whereas Obesity ( $p<0.01$ ) was more likely among students in the western region .

Table 8: Association between clinical presentation and demographic characteristics of the participants (N=84,094)

NS - Not significant

	Age				Gender			Nationality			Region			
	Early childhood	Childhood	Adolescent	<i>p</i> -value	Boys	Girls	<i>p</i> -value	Emirati	Non-Emirati	<i>p</i> -value	Middle region and Abu Dhabi island	Eastern region	Western region	<i>p</i> -value
<b>Abnormal Vision</b>	2498 (9.0)	4505 (15.7)	4590 (16.7)	<0.01	5067 (12.7)	6526 (14.8)	<0.01	9214 (13.6)	2379 (14.5)	<0.01	6856 (16.2)	3881 (10.9)	856 (14.0)	<0.01
<b>Glass/contact lens/others</b>	687 (2.5)	2210 (7.7)	3612 (13.1)	<0.01	2594 (6.5)	3915 (8.9)	<0.01	4966 (7.4)	1543 (9.4)	<0.01	3383 (8.0)	2546 (7.1)	580 (9.5)	<0.01
<b>Abnormal audiometry</b>	1177 (4.2)	1705 (5.9)	1390 (5.0)	<0.01	1965 (4.9)	2307 (5.2)	<0.05	3493 (5.2)	779 (4.7)	NS	2250 (5.3)	1879 (5.3)	143 (2.3)	<0.01
<b>Suspected scoliosis</b>	287 (1.0)	544 (1.9)	938 (3.4)	<0.01	672 (1.7)	1097 (2.5)	<0.01	1409 (2.1)	360 (2.2)	NS	1250 (3.0)	350 (1.0)	169 (2.8)	<0.01

<b>Tooth decay, missing, and filling</b>	134 (0.5)	179 (0.6)	3992 (14.5)	<0.01	1775 (4.4)	2530 (5.8)	<0.01	3434 (5.1)	871 (5.3)	<0.01	2063 (4.9)	1968 (5.5)	274 (4.5)	<0.01
<b>&gt;10</b>														
<b>Obesity</b>	3258 (11.7)	4641 (16.2)	5880 (21.3)	<0.01	7392 (18.5)	6387 (14.5)	<0.01	11056 (16.4)	2714 (16.5)	<0.01	4737 (11.2)	7420 (20.8)	1622 (26.5)	<0.01

---

Given the strong drive from national leadership to look into reducing childhood obesity among school children, I looked deeper in the available data related to weight abnormalities in students' data available. The figure 4 below summarizes findings across age groups, where it was more likely for adolescents to be obese or underweight ( $p < 0.01$ ) for both. While children aged 9 to 11 years were found to show more overweight. ( $p < 0.01$ ).

It was also alarming to find underweight evident in 7.3% of children in their early childhood.

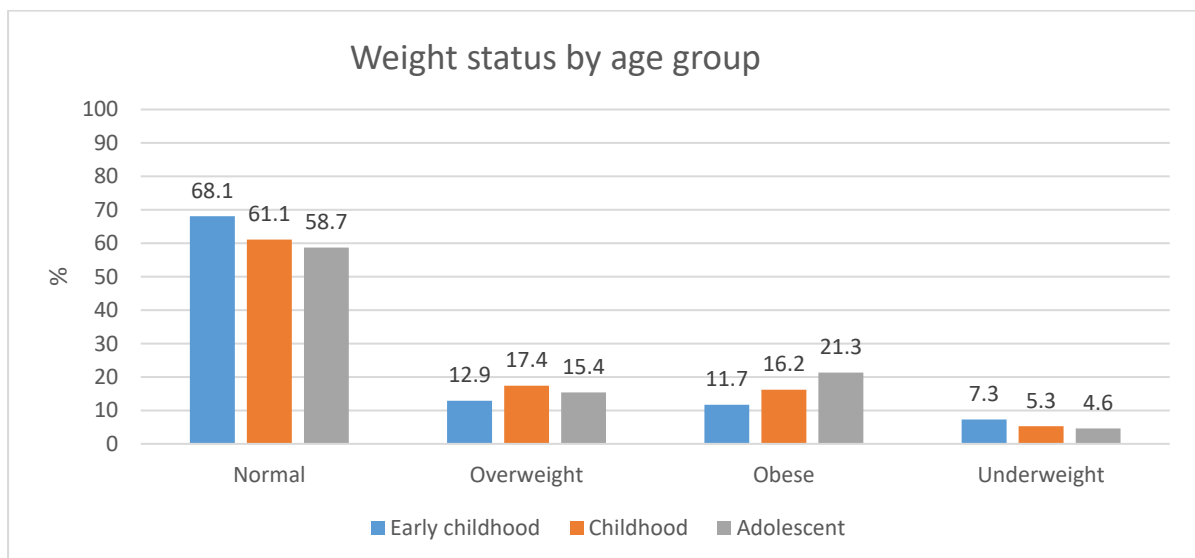


Figure (4): Weight status by age group.

This is also confirmed again when we look at the data using the grade distribution of the children seen in figure 5 below.

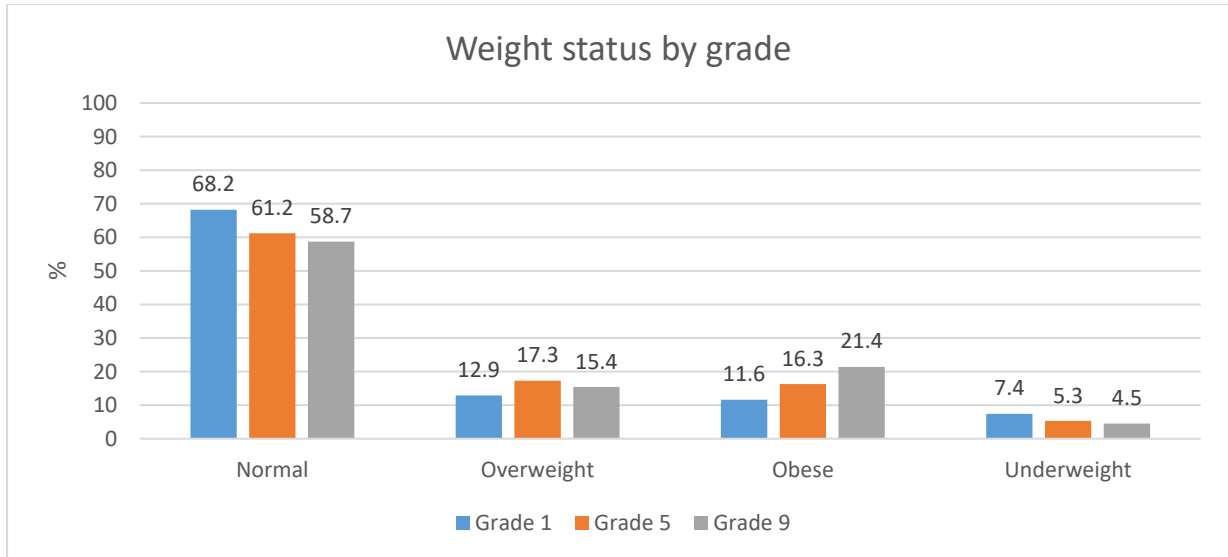


Figure (5): weight status by grade.

When we look at the weight data by gender we find out that girls were more overweight or underweight, while the boys were more obese than the girls; all findings were statistically significant with ( $p < 0.01$ ). figure 6. This is consistent with unpublished data from the Ministry of Health and Prevention.

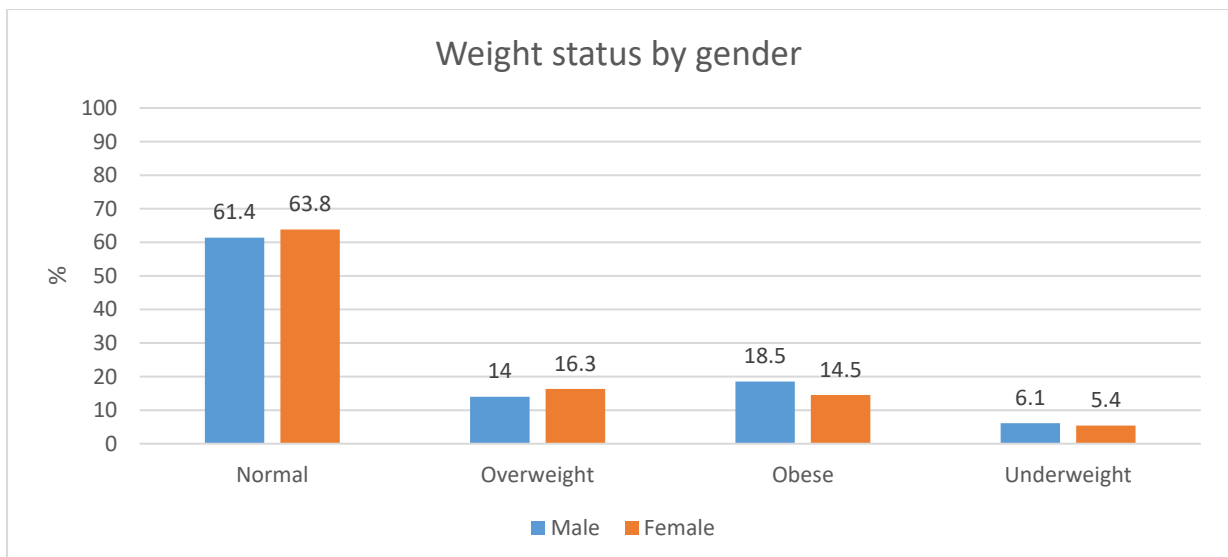


Figure (6): weight status by gender.

When looking into the distribution of weight by nationality, no significant change between Emirati and non-Emirati children were found in the obesity category, however it was noted that Emirati children had a higher percentage of overweight children and 7.2% of non-Emirati children were underweight as compared to 5.4% of the Emirati kids. Figure 7

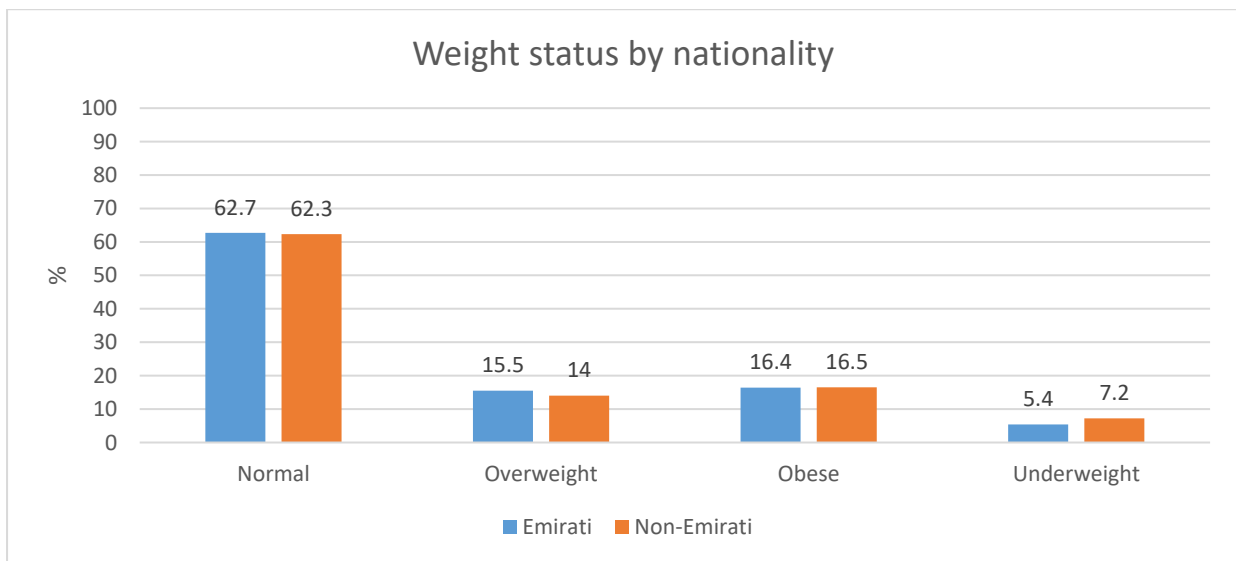


Figure (7): weight status by nationality

The weight status comparison between different regions were quite different (figure 8), especially that 21.9% of the children in Al Dafra region are underweight, 26.5% of the children in the western region are obese, and 10.6% are overweight. The Eastern region showed an equally elevated pattern even though slightly different, 22.5% of children are overweight, 20.8% of children are obese and 2.9% are underweight. In the middle region 9.7% of the children are overweight, 11.2% are obese, 4.1% are underweight, while the majority of 74.9% were of normal weight.

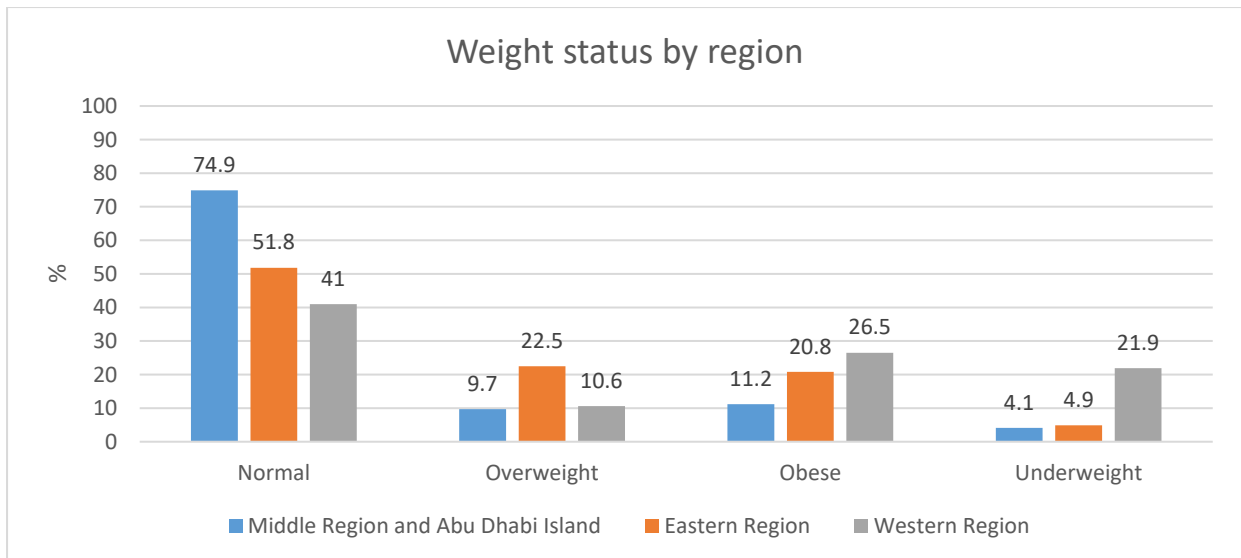


Figure (8): Weight status by region.

Overall, the trend of obesity and underweight are reassuring, obesity reduced from 18.1% in 2015-2016 academic year to 15.5% in 2016-2017 and stayed the same for 2017-2018. The underweight group also got progressively smaller over the years, 8.4%, 4.8% and 4.1% for 2015-2016, 2016-2017 and 2017-2018, respectively.

On the other hand, it is interesting that overweight has increased from 13.4% in 2015-2016 academic year to 16.3% in 2016-2017. The numbers dropped slightly to 16% in 2017-2018 but it is a very small drop and it will be too early to conclude a declining pattern unless this continues for at least two to three more years (figure 9).



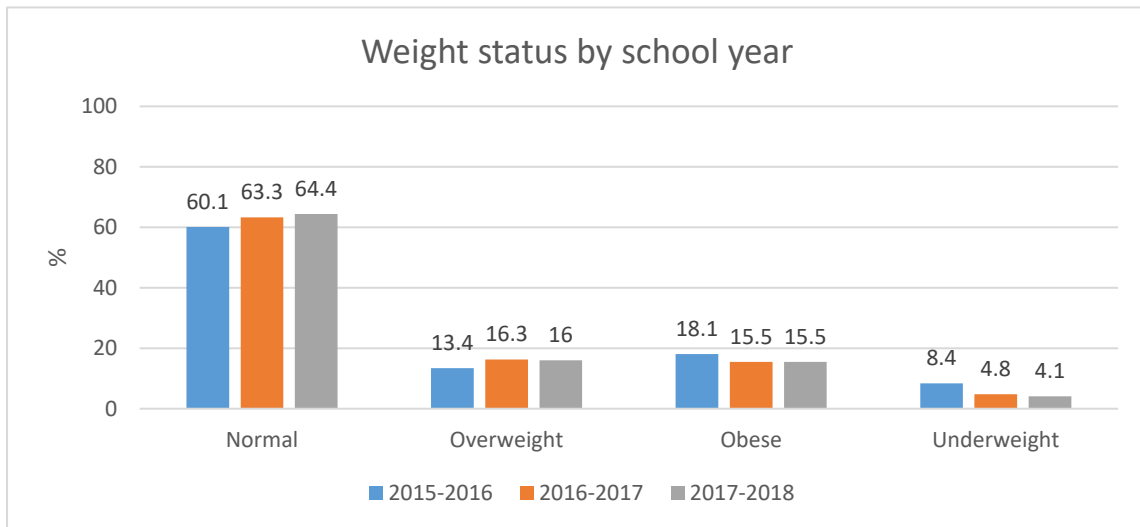


Figure (9): Weight status by school year

#### 4.5 Health promotion related data analysis results:

There were 54,622 students in the academic year of 2015-2017. Of those 14,792 (27.1%) participated in the Department of Health Eat Right - Get Active (ERGA) program. Figure 10.

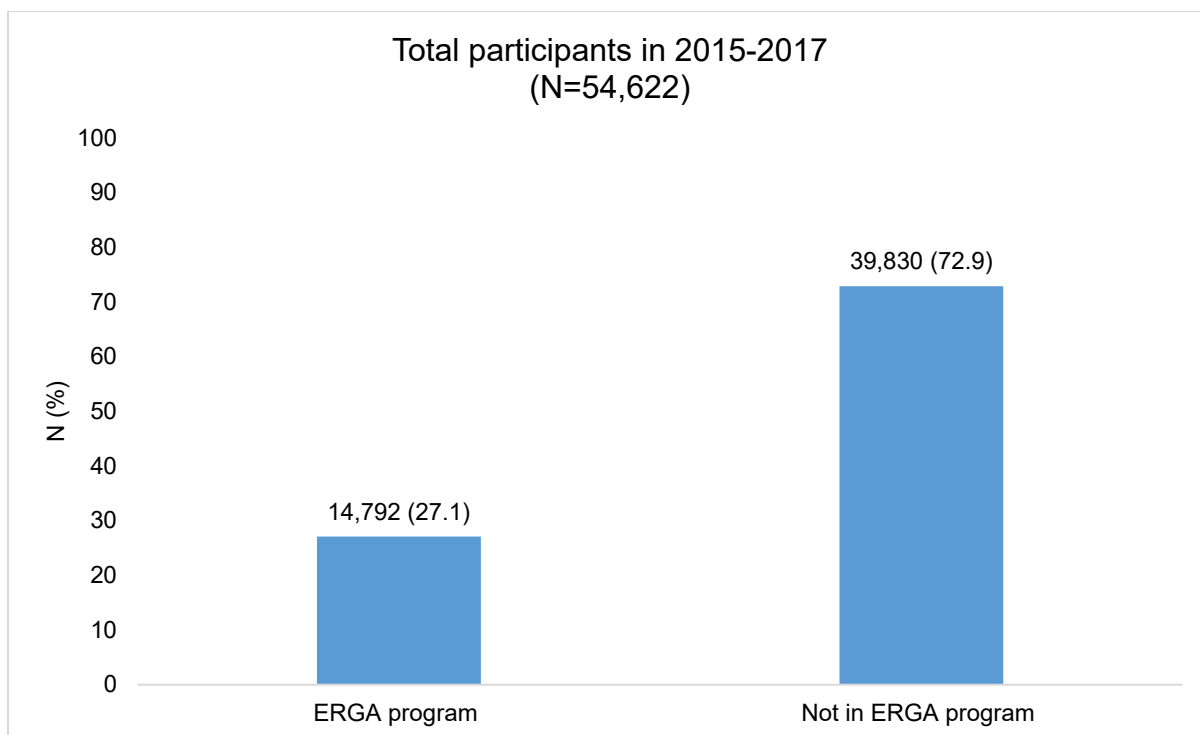


Figure (10): Eat right and get active (ERGA) program

Distribution of clinical presentation according to academic year is shown in Table 9 below.

	Academic year					
	2015-2016			2016-2017		
	ERGA program	Not in ERGA program	<i>p</i> -value	ERGA program	Not in ERGA program	<i>p</i> -value
<b>Tooth decay, missing, and filling &gt;10</b>	544 (7.0)	947 (4.7)	<0.01	429 (6.1)	1055 (5.3)	<0.01
<b>Obesity</b>	1399 (18.0)	3628 (18.1)	NS	1053 (15.0)	3123 (15.7)	NS

---

NS - Not significant Table 9: Association between clinical presentation and academic year  
(N=54,622)

In the academic year of 2015-2016, there was no significant change in terms of obesity among those who participated in the ERGA program. However, tooth decay, missing, and filling (7.0% vs. 4.7%;  $p < 0.01$ ) was higher among those who participated in the program. Similar trends were found in the academic year of 2016-2017. Results of chi-square analyses revealed a statistically significant difference in terms obesity and the percentage was lower among those who participated in the program in the middle region and Abu Dhabi Island (16.1% vs. 17.7%;  $p < 0.01$ ) and western region (15.6% vs. 17.4%;  $p < 0.01$ ).

Clinical presentation according to the region is shown in Table 10 below.

	Region								
	Middle Region and Abu Dhabi Island			Eastern Region			Western Region		
	ERGA program	Not in ERGA program	<i>p</i> -value	ERGA program	Not in ERGA program	<i>p</i> -value	ERGA program	Not in ERGA program	<i>p</i> -value
<b>Tooth decay, missing, and filling &gt;10</b>	601 (6.2)	877 (4.9)	<0.01	333 (10.1)	979 (5.0)	<0.01	39 (2.2)	146 (6.8)	<0.01
<b>Obesity</b>	1560 (16.1)	3177 (17.7)	<0.01	611 (18.4)	3198 (16.2)	<0.01	281 (15.6)	376 (17.4)	<0.01

NS - Not significant

Table 10: Association between clinical presentation and region (N=54,622)

## **Chapter 5**

### **5.1 Public Health Actions taken based on these analyses:**

During the work on this thesis and with the results of the analysis of the available data, it was clear that we have to take quick action to improve our school screening programs, health education programs and also general school based medical services. The issues were officially raised to Department of Health leadership who were very supportive, and the following summarizes the actions that cascaded as a result.

#### **5.1.1 Program revision 2018 - 2019:**

A resolution has been issued by The Undersecretary of the Department of Health (previously called HAAD until 2017), in October 2018 for the revision and improvement of the current schools' health screening program. An internal team lead by the director of Public Health (myself) and including four other Directors from HAAD (Health Quality, Strategy and corporate performance, Customer care and corporate communication and Emergency and Disaster Management) and several supporting colleagues from related directorates like Health System Financing, were nominated as part of the team for the revision of the program. The School Health program steering committee was formulated.

### **5.1.2 HAAD Internal Team meetings:**

Several meetings were held following the undersecretary resolution in 2018 to discuss current school screening program and to identify required changes.

Meetings concluded with:

- Formation of Technical Expert Team.
- Evaluation of the current program.
- Re-structuring the program.

### **5.1.3 Technical Team appointment and meetings:**

The internal team nominated expert members from external bodies/ authorities and formed a technical committee for advisory purposes in each of their specialties.

External bodies/ authorities:

- United Arab Emirates University.
- Ambulatory Healthcare Services (AHS) - Abu Dhabi Health services company (SEHA).
- Shaikh Khalifa Medical City (SKMC) - Abu Dhabi Health services company (SEHA).
- Abu Dhabi Department of Education and Knowledge (ADEC).

- Maudsley Health Abu Dhabi (specialized in mental health of children and adolescents).
- Cleveland Clinic Abu Dhabi.
- Tawam Hospital.
- Zayed University.
- Health Plus Diabetes & Endocrinology Center.

#### **5.1.4 Program Evaluation:**

In efforts to evaluate the program and make better decisions to improve it, SWOT analysis was conducted by the technical team to identify its strengths areas and factors that hinder achieving the goal of the program or benefit from its services. The results listed below confirms my previously reported opportunities and challenges.

#### **Strengths**

1. Allow for early detection and treatment of health problems.
2. Parents are informed of their children health problems.
3. The program covers all public schools and a number of private schools.
4. Screening services cover all students in public schools (Nationals and non-nationals).

5. Availability of data (e.g., obesity data) to help develop intervention plans.
6. Contribute to future cost reduction and reducing related negative effects of some diseases (e.g. learning difficulties due to hearing problems).
7. Provision of Health Education in schools.
8. Oral and Dental health checks performed.

### **Weakness**

1. The program does not cover all private schools.
2. Screening services do not cover many non-national students due to their Health Insurance.
3. No system to track results of referrals and how students benefit from the program.
4. No clear system/model to study the health impact of the program.
5. Feedback from schools show that many parents do not take their children for follow ups.
6. Awareness efforts did not reach many schools especially in the private sector.



## **Opportunities**

1. Provision of screening services to students in private schools through (SEHA) facilities or other providers.
2. Strengthening health care providers' capacity to provide follow up services.
3. Strengthening tracking systems of follow up services after screening.
4. Strengthening supervision over programs implementation and periodic comprehensive screening.

## **Threats**

1. Insufficient funding.
2. Cost of screening services.
3. Inadequate supervision and tracking systems.
4. Shortage of Qualified School Nurses in schools, especially in private schools.
5. National students in private schools might not receive screening services regardless of holding *Thiqa* health insurance.

### **5.1.5 Proposed Program update:**

Following program revision and evaluation, changes were proposed to some of its aspects including:

- Program structure.
- Program services.

### 5.1.5.1 Structure updates:

- The expert group proposed that the School Health Program gets re-structured into (9) elements.
- Objectives and KPIs were set for each element.

The elements and KPIs are summarized in the table 11 below

	Elements	Objectives	KPIs	
1	School Health Services [Emergencies, Services, Vaccine]	1.1 School Health Emergencies	Ensure readiness for health emergencies at schools	Number of Policies and procedures published or updated for specific emergencies
		1.2 School Health Screening	To ensure that schoolchildren receive evidence-based age-appropriate health screenings	Percentage of schoolchildren in Abu Dhabi who receive the evidence-based age-appropriate health screenings.
		1.3 Vaccination and infectious disease	Reduce the burden of vaccine-preventable diseases and improve vaccination coverage rate.	Vaccination refusal rate.
		1.4 Early childhood intervention and related funding	Develop a system of cost effective physical, occupational, and speech therapy services that promotes the child's age-appropriate growth and development during the critical early	Percentage of schoolchildren in Abu Dhabi who receive the evidence-based age-

			years; to prevent children with or at risk of disabilities from child abuse and neglect	appropriate early childhood intervention.  Percentage of health spend reduction in certain therapy related services for older age children
2	<b>Quality Monitoring and Improvement</b>		Monitor and evaluate school health overall quality services in the Emirate of Abu Dhabi.	Outcome measured include (tracking student health status, service utilization, individual health program effectiveness, and education related outcomes).
3	<b>Physical Activity</b>		<ol style="list-style-type: none"> <li>1. Spread awareness that drives and encourage students to play sports to strengthen their body and gain full body fitness.</li> <li>2. Building Team spirit and educate students with the moral values of participating in group sports and competitions.</li> <li>3. Social Development through individual and group sports: Develop and build students self-confidence and healthy social attitudes and behavior such as sportsmanship.</li> <li>4. Improve students' mental health and reduces stress and tension.</li> <li>5. Teach students the importance of investing their leisure time in practicing physical activities.</li> <li>6. Provide special attention and care to talented students in sports.</li> </ol>	Percentage Increase in the number of children engaged in physical activity, sports activities, and improved their health.

4	<b>Food Safety and Nutrition</b>	<ol style="list-style-type: none"> <li>1. To create an enabling environment in schools for: “healthy food choices”</li> <li>2. To include nutrition in the curriculum for all levels of education.</li> <li>3. To ensure that food security is promoted and practiced at all levels of education.</li> <li>4. To improve and maintain all aspects of food quality and safety.</li> </ol>	<ol style="list-style-type: none"> <li>1. Number of schools enrolled.</li> <li>2. Number of schools inspected.</li> <li>3. Number of grades for which health and nutrition curriculum was introduced.</li> </ol>
5	<b>Policies, Standards and Governance</b>	Develop/updated policies, standards and/or guidelines, if needed, to support any of the proposed holistic school health programs proposed by HAAD	<ol style="list-style-type: none"> <li>1. Number of Standards issued or updated.</li> <li>2. Number of policies issued or updated.</li> </ol>
6	<b>Health Promotion and Disease Prevention</b>	Provide structured and innovative health promotion to the whole school community through various streams	<ol style="list-style-type: none"> <li>1. Process Indicator: Number of planned activities delivered. Number of schools reached and Number of students reached.</li> <li>2. Outcome Indicator: Percentage of change in knowledge &amp; attitude towards healthy habits adoption.</li> </ol>
7	<b>School Screening Bundles and Economic Impact</b>	<p>Provide comprehensive coverage payment bundles through insurance or alternative subsidies to ensure that all students have equal access to the comprehensive school screening and other school health services.</p> <p>Start a longitudinal study to evaluate economic impact of the approved programs and the selected payment mechanisms.</p>	Provide two or three alternatives to senior leadership for financial sustainability of the program by the end of 2020.
8	<b>Licensing and Privileging</b>	<p>Encourage recruitment and retention of qualified school nurses.</p> <p>Establish an educational program to graduate locally educated qualified school nurses.</p>	<p>Number of qualified nurses licensed.</p> <p>Annual retention rate of hired qualified nurses.</p>

		Establish bridging courses to qualify registered nurses to work in school setting.	
9	Public Health Surveillance	Develop data collection tools to monitor the health school outcomes for school-based screening programs such as vaccines, BMI, vision, oral health and linking those to the electronic health record of the student with real time data exchange availability.	Develop and link the system by the end of 2021.  Publishing an annual report for the outcomes of school screening.

Table 11: School Health 9 elements General restructure and the proposed KPIs.

**5.1.5.2 Proposed updates to the element of school comprehensive screening**

**The annual school screening**

<b>Grades</b>	<b>Medical History</b>	<b>Blood Pressure</b>	<b>BMI (Height &amp; Weight)</b>	<b>DMFT for primary, mixed OR permanent dentition</b>	<b>Mental health screening</b>	<b>Fluoride Varnish</b>
<b>All Grades</b>	√	√	√	√	√ <b>All grades except grade 1</b>	√

Table 12: Annual School Screening

The new proposal mainly targets expanding the components of the basic annual screening to include mental health screening in all grades apart from grade one, also include dental screening and fluoride varnish in all grades annually as detailed in table 12 below.

In addition, the screening should provide health counselling, useful information and instruction for students, parents, and faculty/staff. Promote a risk-free environment and to ensure a healthy environment for students at school and to integrate the school health program with other health service delivery and data reporting systems. In addition to reducing the incidence of infectious diseases and outbreaks within a school setting, through making providers responsible for planning and implementing programs of prevention and control of communicable diseases in accordance with the HAAD regulations.

The new proposal will hopefully improve the early detection and care of students with health problems and shall also help develop and implement plans of action for their management, design a health referral and follow-up system and ensure the quality and performance through reliable internal supervision and clear internal and external audit plans.

The selected provider will be responsible for ensuring planning and sourcing licensed school health nurses in accordance to the schools' list and students' distribution plan to deliver high quality health services for AD schools as described

above in part I above. Providers will assign charge nurses to conduct regular field visits to support, supervise and monitor school nurses' performance consistently to assure delivery of service and service quality.

The provider should ensure meeting required ratio of allocation of school nurses at all schools: one nurse for each school is a must; for schools which have more than 750 students, an additional nurse should be provided with a ratio of one nurse to 750 students and is subject to ADEC's and MOE approval. The provider should allocate additional 10% of existing school nurses to cover emergency and planned nurses' absence. The nurses covering the schools should be of the same gender as the school students in cycles two (grades 6 to 9) and three (grades 10 to 12) schools or equivalent grades in private schools, female nurses might serve KG and Cycle one (grades 1 to 5) schools or equivalent in private schools.

The provider selected will be also expected to develop and implement an emergency care and emergency preparedness plan. Further, they will identify problem areas in the school environment and assist with corrective measures to ensure environmental health and safety.

All school age students, nationals and non-nationals in both public and private schools (509 schools across all areas of the Emirate of Abu Dhabi serving over 389,000 students both girls and boys studying from KG1 to Grade 12 or

equivalent) are to be included in the annual and comprehensive school screenings and all the other school health services.

Insurance Programs (funded mandates) will cover all services for communicable diseases prevention and emergency medical conditions and emergency preparedness. *Thiqa* insurance, and some enhanced insurance packages will cover the school; health screenings and services for those students who have them, for other students on the basic insurance scheme several models are proposed and will be discussed below.

### **The comprehensive school screening**

The vision and hearing screening has been moved based on the recommendation of clinical and academic experts from the external stakeholders' technical committee from the annual screening to the comprehensive school screening.

**The vision** is to be checked at grades one and five and nine with color blindness testing introduced at grade five. There will also be a vision screening catch up in grade two for students who missed it in grade one for whatever reason. The proposed process is attached below in figure 11.



## Vision screening process for school nurses and technicians

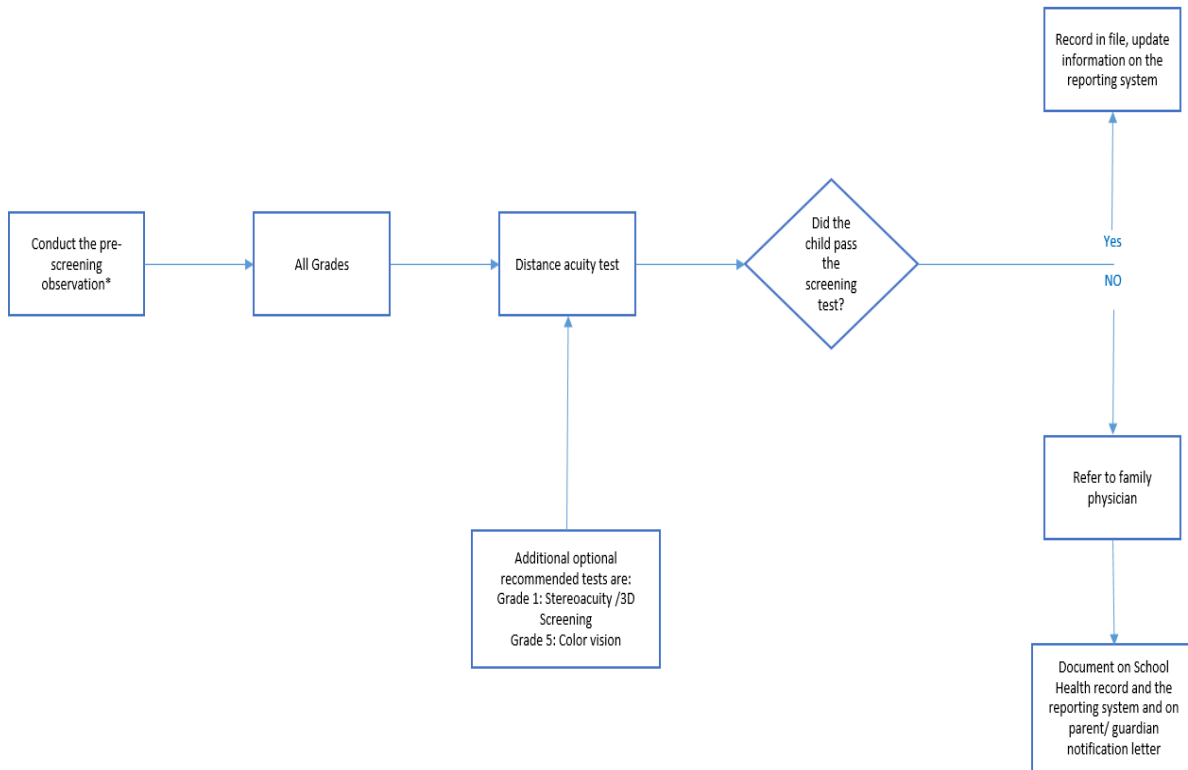


Figure (11): Process of Vision Screening

**The hearing screening** is also changed from annual screening to testing at grade one and in grade two for those who missed the hearing screening in grade one only. The process is shown in figure 12 below.

## Hearing screening process for school nurses and technicians

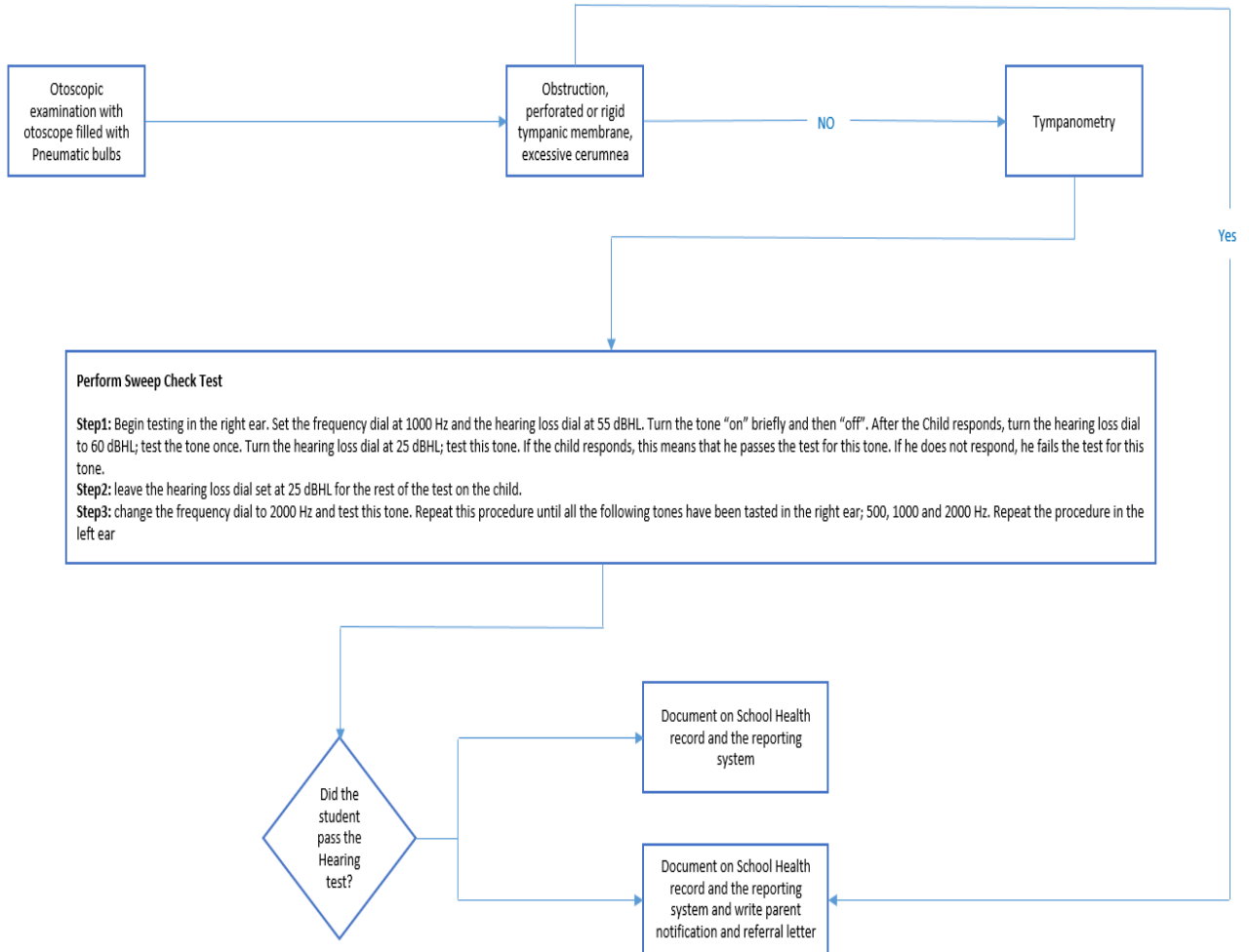


Figure (12): Hearing Screening Process

**The scoliosis screening:** is also proposed to be changed based on technical experts advice and scientific rationale to change from grade five for both genders and seven for female students and nine for male; to the new schedule starting at grade

one for base line and then for in grade five, then finally in grade 9 for both males and females. The scoliosis screening process is detailed in figure 13 below

### Scoliosis screening process for school nurses and technicians

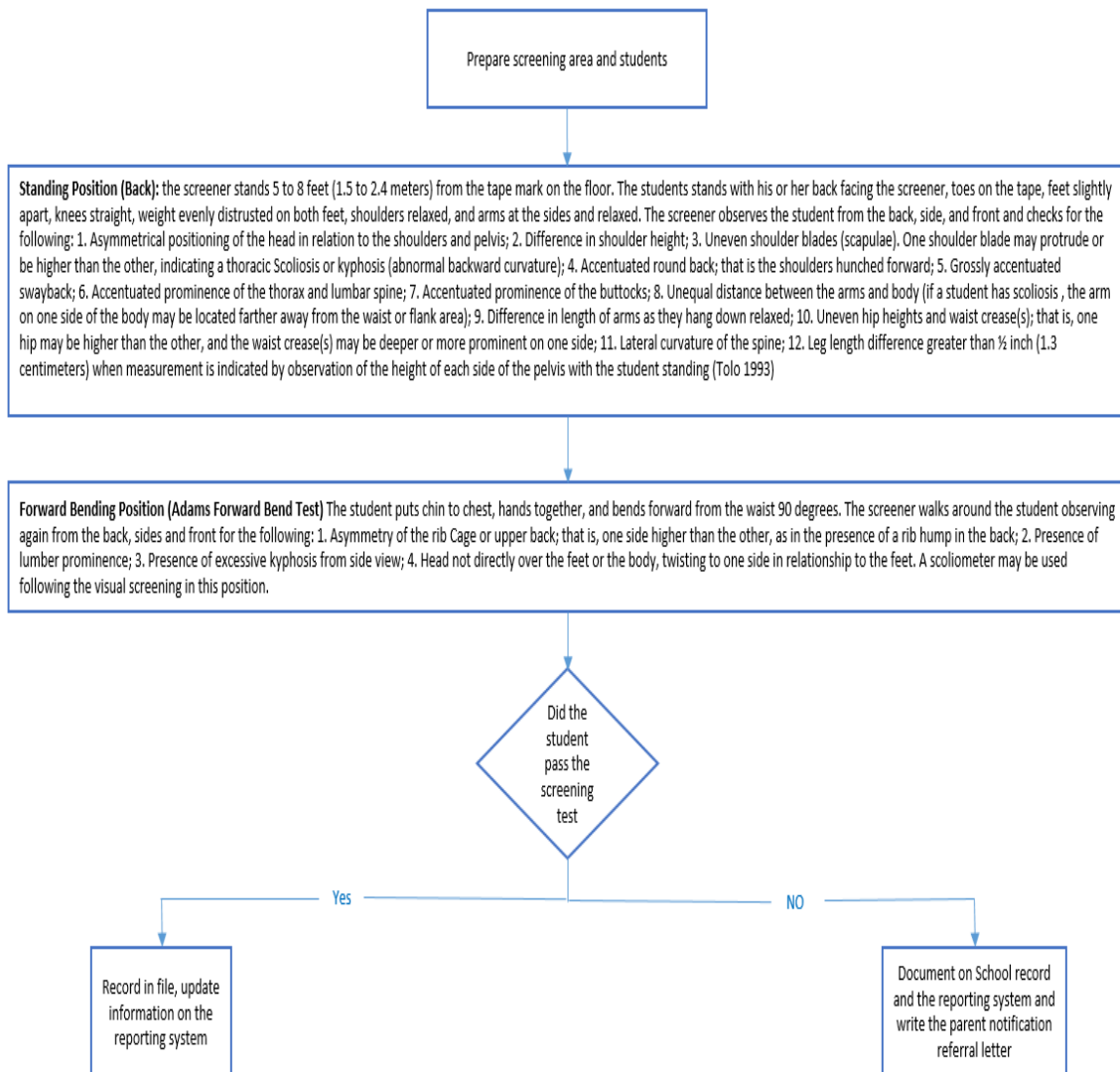


Figure (13): Scoliosis Screening Process

## Comprehensive school screening

Table 13: Comprehensive School Screening

Grades	Physical Exam /History	Vision	Hearing	Dental Fissure Sealant	Scoliosis	CBC
1	√	√	√	√	√	√
3				Review Retention and Reapply if lost		
5	√	√ plus color blindness			√	
6				√		
8				Review Retention and Reapply if lost		
9	√	√			√	√ female

To make it easier for parents and schools, any physical examination done in a HAAD licensed Healthcare Facility will be accepted if it has been done not more than twelve months prior to the commencement of the school year, in which the examination all the required assessment elements as detailed in the table 14 below.

Parents should submit the physical examination, signed by a licensed physician to the school before the scheduled physical examination due date.

### Student Screening History & Physical Examination

<b>Student name</b>	<b>Date of Birth</b>
---------------------	----------------------

N = Normal, Ab = Abnormal, NA = Not Applicable. Please specify abnormal findings.

Grade	1 <sup>st</sup> Grade	5 <sup>th</sup> Grade	9 <sup>th</sup> Grade
History			
General Appearance			
Vital Signs: <ul style="list-style-type: none"> <li>• Body temperature,</li> <li>• Pulse rate (or heart rate),</li> <li>• Blood pressure,</li> <li>• Respiratory rate</li> </ul>			
Urine Dip stick			
Skin, Hair, Nail			
HEENT *			
Heart (Murmur, Rhythm)			
Lungs			
Abdomen/ Hernia			
Genitalia for Boys (undescended testicles, Hydrocele)			
Sexual Development			

Musculoskeletal System			
Impression/Diagnosis			
Referral (Y/N)			
Referred (to)			
Response received (date)			
Doctor			

\* Check for Strabismus, Conjunctivitis, Hearing, Otitis, Pharyngitis, Neck Mass, Lymph nodes

Table 14: Student Screening History & Physical

### **Weight screening and referral to specialized weight management services**

To improve the referral process of students with weight issues, a clear referral process is required, Underweight (the BMI percentile less than 5th on the WHO growth charts) → refer to family physician → document on school health record and HAAD School screening reporting system and write parent/guardian notification and referral letter. Overweight is equivalent to BMI more than the 85th percentile → refer to family physician → document on school health record and HAAD School screening reporting system and write parent/guardian notification and referral letter, and for children with Obesity which is equivalent to 97th percentile → refer to family physician → document on school health record and

HAAD School screening reporting system and write parent/guardian notification and referral letter.

### **Dental screening:**

Given the large burden of dental caries and oral disease and the costs related to its future treatment on the government, the technical team and the project steering committee both agreed to incorporating intensive dental screening and preventive services into the annual school health screening.

One of the most noteworthy results reported in literature review by one research report was the fewer expenses incurred by dental problems for children who had received preventive treatment in earlier stages of their life (Savage, 2004). In another study, it has been found out that the average cost for a one-surface filling treatment is 411 AED, whereby when prevented it would save 242 - 268 AED, thus proving the cost-effectiveness of prevention over the treatment of dental caries (Ramos-Gomez et al, 1999). More studies are inclined to the cost-effectiveness of the prevention of dental caries. A cost analysis done by Zavras et al. (2000) predicts savings of 7.6% from screening and early prevention, and an example of a 4-year old child dental treatment that would cost 1351 AED if that child had been screened would cost 1457 AED otherwise.

Also, according to the Center for Disease Control and Prevention in the USA, using school-based programs to provide sealants to roughly 7 million children who lack them could save up to \$300 million in dental treatment costs (CDC. School-Based Dental Sealant Delivery Program.2019.

[https://www.cdc.gov/oralhealth/dental\\_sealant\\_program/index.htm](https://www.cdc.gov/oralhealth/dental_sealant_program/index.htm) ). A study revealed that a School-Based sealant program serving 1,000 children can prevent the need for 485 dental fillings; the same study also showed that sealants, once applied can protect against 80% of cavities for two years and continue to protect against 50% of cavities up to four years (Griffin et al.2016).

Also, Fluoride is a valuable caries prevention modality. Fluoride application or fluoride varnish is widely used worldwide to prevent dental caries in children. Fluoride varnish re-mineralizes the areas where the decay starts and reverses the decay process. The effectiveness of Fluoride application in prevention of dental caries is proved through extensive and comprehensive literature over the years and is clearly recommended by the American Dental Association (Weyant,et al. 2013)

Bonetti et al (2016) report that the consistency and size of the reductions in caries increment in both primary and permanent dentitions throughout all the reviews (the majority showing 25-45% caries reduction), emphasizes the clinical efficacy of Fluoride Varnish for preventing decay.



The health care service provider that will be responsible to provide the basic screening services including recording primary, mixed OR permanent Decay Missing Filled teeth index (DMFT) for every child. Applying Fluoride Varnish-concentration of 5% NaF (2.26% fluoride varnish) is to be used.

Fissure seal all first permanent molars in all children in grade one, and fissure seal all second permanent molars in all children in grade six. Screening for fissure sealant in the third grade and 8th grade is mandatory from the start of the program and in case needed re-application shall not incur additional costs.

The dental providers shall ensure that schoolchildren receive a dental health card detailing the date and services offered through this program and the referral follow up care as needed. These serves are to be provided in a patient friendly manner. The child is expected to maintain this card and show it at every school dental encounter.

Primarily services are to be offered onsite in schools using a fully HAAD licensed mobile dental clinic or within the school premises in any other safer locations identified by HAAD and the schools. The facility offering its services can utilize its primary dental clinics. And the required services can only be provided by a HAAD licensed dentist or a licensed hygienist who is trained in managing children at the dental chairside.

## **Mental health screening at schools**

Given the published reports of the WHO Global School-based Students Health Survey 2010, the percentage of students who had seriously contemplated suicide over the last 12 months was 15.5 %. And those who reported that they actually attempted suicide at least once over the last year reached 12.6 % of 2581 students from public and private schools in UAE between 13 and 15 years old. (WHO. 2010. <http://www.who.int/chp/gshs/en/>)

Mental health screening in schools is a very important element of a comprehensive approach to behavioral health prevention, early identification, and intervention. Early recognition and management of mental health challenges can greatly improve outcomes for students (Costello, et al.2016).

Schools are a critical setting for screening, consistent with the public health strategy to improve population health of all students and families. On the other hand, extreme caution must be exercised to avoid misidentifying and inappropriately stigmatizing a youngster. We should also “avoid tendencies to see normal variations in students' development and behavior and other facets of human diversity as problems” (Adelman et al. 2006).

Because of that we have decided to pilot the mental health screening in 6 to 10 schools in the academic year 2020-2021 and use the pilot to address concerns

and evaluate the impact on the kids, parents, schools and health services. The pilot will also help us assess the readiness of all stakeholders for the implementation of mental health screening in our schools.

MFQ questionnaire in Abu Dhabi Schools is advocated for by the technical committee of the school health improvement project, MFQ screening is used in several countries including the UK and New Zealand.

### **Purpose of the Mood and Feelings Questionnaire (MFQ):**

The Mood and Feelings Questionnaire (MFQ-C); first described by Costello and Angold in 1988. It is designed to measure depression for young people (7-18 years old), covering a broad range of affective, cognitive, and vegetative symptoms. It is useful as a screening measure. When combined with face-to-face interview, the MFQ-C can aid in the diagnostic assessment of depressive disorders in young people. The MFQ-C is also sensitive to change, and it can aid in evaluating the effect of treatment (Rhew et al. 2010).

### **Description of the measure:**

The MFQ-C is a 33-item self-report measure. Each item is rated on a 3-point scale (True, Sometimes, and Not True) according to how the young person has been feeling over the previous 2 weeks. Items are simple for children to understand

and cover a broad range of child and adolescent depressive symptoms. There is a parent use version of the form as well.

### **Administration:**

Young people can complete the MFQ-C within 5 minutes. Younger children may need some help with completing it.

### **Scoring:**

MFQ is performed annually at the beginning of the academic year preferably (Same time as the medical health check-up)

Questionnaire is distributed to caregivers of the children by the school nurse as a hard copy or an electronic link sent to care givers. Once returned from the caregivers, the nurse will collect all reports and analyze it using the score given.

Depending on the score of the student, the nurse decides whether the student will need to be referred to primary health care professional for further assessment or not. The data analysis score should be entered electronically and so is the referral to the primary health care.

### **Vaccination Service**

HAAD is responsible to supply the vaccines to provider. However, provider responsibilities are:

1. Adhere with HAAD standards and circulars for vaccination such as “HAAD Standard for Childhood and Young adult Immunization” (HAAD. 2013. <file:///C:/Users/tab/Downloads/HAAD%20Standard%20for%20Childhood%20and%20Young%20adult%20Immunization.pdf>) and “HAAD Standard for Safe Vaccine Handling and Cold Chain maintenance in the Emirate of Abu Dhabi” (HAAD.2012. <file:///C:/Users/tab/Downloads/HAAD%20Standard%20for%20Childhood%20and%20Young%20adult%20Immunization.pdf>).
2. Comply with the updated school vaccination program by HAAD. When directed by HAAD, provider is also responsible to implement vaccination campaigns as well as vaccination of close contacts of an infectious disease case including students and staff. All these vaccination services should be provided at the school setting.
3. Prepare SOPs for all activities related to vaccination services and obtain HAAD approval prior to implementation such as documentation, consent forms, refusals and most importantly defaulters follow-up process.
4. Communicable Diseases and Outbreak Management.

The school nurse shall follow HAAD communicable disease management protocol. The school nurse shall identify the suspected and confirmed communicable diseases within school settings and report them to HAAD using the electronic

infectious diseases notification system (IDN) The school nurse will take infection control precautions and measures to manage and control the spread of diseases within the school community as per international recommendations and HAAD regulations. The school nurse should follow-up implementing prevention and screening measures as directed by HAAD and ADEC, MOE ensuring coordinating required actions with school administration and students' guardians.

School nurses shall provide HAAD communicable diseases staff with required information on exposed students/staff, contact numbers, medical history, copies of sick leaves or vaccination cards.

Updated list of names & contact numbers of all school nurses shall be provided to HAAD communicable diseases department at the beginning of each academic year, and when changes on the contact list occurs. This helps to facilitate communication between HAAD and school nurses when needed. Copy of vaccination card shall be obtained for newly admitted students. Students with incomplete vaccination records shall be referred to the designated catch up healthcare center.

Any information related to infectious diseases and vaccination should be revised by HAAD/CDD before sharing it with parents/students.

### **5.1.5.3 Health Promotion and Education**

The school nurse shall conduct one to one health education for students and their parents as medically needed to support management of individual cases. The school nurse should organize and conduct group health education sessions for parents, staff, and students and should utilize campaigns, events, world health days, extra-curricular activities at schools to conduct opportunistic health education. These activities shall focus on increasing school community knowledge and awareness of health and wellness topics that cater for specific needs of the school community.

The school nurse shall plan and implement an annual health promotion event in collaboration with the school health and safety committee and the social worker throughout the academic year aiming at improving adoption of healthier beliefs, practices and behaviors within school community.

### **5.1.6 Program monitoring:**

#### **5.1.6.1 Documentation and Reporting:**

The school nurse will initiate and maintain updated students' medical records every academic year and shall receive and file parental consents and students' medical history. The school nurse will record all health and medical information and manage its confidentially. The student's record needs to be securely available at the school's clinic. The school nurse will update the student's medical record and

shall comply with HAAD reporting requirements. The school nurse will comply with HAAD, MOE and ADEC reporting requirement such as electronically report to HAAD via <https://bpmweb.HAAD.ae> (HAAD Standards for Reporting of Public Health Statistics) within the acceptable timeframe. Notifications include but are not limited to suspected and/or confirmed communicable diseases, Immunization Information System (IIS), Adverse Events Following Immunization (AEFI), non-fatal injury and poisoning via HAAD e-notification system.

#### **5.1.6.2 Data and Reports:**

Providers shall share the statistical report as well as the raw data related to school health for the services provided at schools with HAAD, ADEC and MOE. The data shall be shared with authorized ADEC, MOE managers as per HAAD guidelines on routinely basis during the academic year. The report shall reflect the school health activities and to be submitted as per the KPIs mentioned. The provider shall have integration capabilities between its electronic health record of the Student and HAAD. The data shall be shared with HAAD through the integration or another method agreed between HAAD and the provider. The Provider shall not release, publish, or share any student related data to any third party without prior written consent from HAAD, ADEC and MOE. Reporting of data shall comply with all data sharing requirements as outlined by Abu Dhabi Smart Solutions and Services Authority (ADSSSA) [adsssa.gov.ae](http://adsssa.gov.ae).



### **5.1.6.3 Quality Review and Improvement:**

The Department of Health team requires the provider selected to continuously review the quality of school health operations at Abu Dhabi schools utilizing health statistics; charge nurses' feedback, incidences as well as stakeholders' feedback. Under the supervision of our team, provider will manage and review suggestions and complains received from stakeholders. Complaints and corrective actions will be reported to HAAD.

### **5.1.7 Development of Specialized School-based Healthcare Service.**

The selected provider should liaise with regulatory authorities, healthcare providers and health insurance companies to introduce further specialized healthcare services to students throughout the schools. Services might be provided to students through schools' clinic, or mobile units as approved by ADEC, MOE and HAAD. The intention behind the introduction of services should be enhancing student accessibility to healthcare services, improvement of medical cases follow-up, which leads to improving overall health outcomes as well as reducing student absenteeism.

### **5.1.8 Key performance indicators for evaluation:**

Specific key performance indicators listed in the tables 15 below are to be mandated on the selected provider to report periodically.

	Dental KPIs	Acceptable level	Target Level
1	Complete Dental Electronic Documentation (Fluoride varnish/dmft or DMFT/Fissure Sealant/referral) on the following KPIs (2-10) is compulsory- matched with aggregated student demographics (age/gender/grade/nationality/Abu Dhabi region)	100% Complete Charting and Documentation	100% Complete Charting and Documentation
2	Reach- the percentage of children who had received fluoride varnish twice during the school year.	75%	85%
3	Reach- the percentage of children who had received 4 fissure sealants in a single session.	75%	85%
4	Reach- the number of teeth sealed in every operating work cycle. [a work cycle is a school term or else as shall be defined and agreed upon with the school governing bodies]	75%	85%
5	Reach- the percentage of children who did not receive Fissure Sealant with the reasons distribution (parental refusal/behavior and noncooperation/not-erupted teeth or other)	25%	0%
6	Reach- the percentage of children who were not screened and did not receive Fluoride Varnish with the reasons distribution (parental refusal/behavior and noncooperation/not-erupted teeth or other)	25%	0%
7	Retention reach- the percentage of children who received fissure sealant and were screened for retention after 24 months of fissure sealant application	85%	100%
8	Retention- the percentage of children who had their fissure sealants fully retained after 24 months.	85%	100%
9	Reapplication- the percentage of children with lost or partially lost fissure sealant after 24 months of initial application who received a re-application	85% of children with lost/partially lost FS.	100% of children with lost/partially lost FS.

10	Referral- the percentage of children who were referred for further assessment and/or treatment (out of those identified to need such referrals)	90%	100%
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### 5.1.8.1 Dental screening KPIs

Table 15: Dental screening KPIs

### 5.1.8.1 Health Promotion KPIs

	Health Promotion KPIs	Acceptable level	Target Level
1	Organize one comprehensive health promotion event in school per academic year to promote health in the school community.	One event per academic year	One event per academic year
2	Organize 3 parental and school staff workshops per year- on 5 different health topics. Healthy eating/Physical activity/Oral health/mental health/Healthy cooking or other as required by HAAD.	2 in every academic year	3 in every academic year

Table 16: Health Promotion KPIs

### 5.1.8.2 Marketing of the School Health Services KPIs

	KPI Definition	Acceptable level	Target Level
1	Development a marketing plan for the school health services that will involve designing a brand name and a logo for the health services- in consultation with HAAD and the school governing bodies (ADEC and MOE)	Finalizing the drafts on or before the start of the academic year 2020/2021	Finalizing the drafts on or before the start of the academic year 2020/2021
2	Development of child and adult friendly electronic posters, roll ups, pamphlets and booklets that will serve the health education and marketing needs of the program- - in consultation with HAAD and the school governing bodies (ADEC and MOE)	Finalizing the drafts on or before the start of the academic year 2020/2021	Finalizing the drafts on or before the start of the academic year 2020/2021

4	<p>Design and production of a dental health card for every child in consultation with HAAD.</p> <p>So it includes-</p> <ul style="list-style-type: none"> <li>• The fluoride varnish table</li> <li>• Fissure sealants received.</li> <li>• School Grade and dmft/DMFT</li> <li>• Treatment need.</li> </ul>	<p>Finalizing the drafts and printing on or before the start of the academic year 2020/2021.</p> <p>The count of print outs should be 20% more than the number of schoolchildren.</p>	<p>Finalizing the drafts and printing on or before the start of the academic year 2020/2021.</p> <p>The count of print outs should be 20% more than the number of schoolchildren.</p>
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Table 17: Marketing of the School Health Services KPIs

### 5.1.8.2 Mental Health KPIs

	KPI	Definition	Acceptable level	Target level
1	Participation rate	Percentage of eligible students who have completed /performed the MFQ screening.	>75 %	>85 %
2	Referral of individuals with abnormal screening	The percentage of students with abnormal /high risk screening results, referred for appropriate management; primary care or secondary care intervention within 2 weeks from releasing the results (15working days)	>85 %	100%

3	Opt out rate	Percentage of students who opt out from the MFQ screening among the eligible population.	<30 %	<10 %
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Table 18: Mental Health KPIs

### 5.1.8.5 Annual and Comprehensive Screening KPIs

	KPI	Definition	Acceptable level	Target level
1	Screening rate	% of schoolchildren who have received all components of the annual screening.	>98%	100%
2	Screening rate	% of school children who have received all components of the comprehensive school screening	>90%	>95%
3	Referral of individuals with abnormal screening	Out of total diagnosed/screened children with abnormal /high risk, screening results/positive results, provide the % of children that were referred for further diagnosis / consultation and appropriate management.	> 95%	100%
4	Referral of individuals with abnormal screening	% of students that were referred within 2 weeks of abnormal diagnosis.	>98%	100%

5	Referral rate	<p>% of referred students that have attended the required care/follow-up / management /counselling per health issue per student age and grade for each of;</p> <ul style="list-style-type: none"> <li>• Vision</li> <li>• Hearing</li> <li>• Scoliosis</li> <li>• CBC</li> <li>• Blood pressure</li> <li>• BMI</li> </ul>	>90%	100%
7.	Reporting	<p>(If electronic health record is not yet integrated)</p> <p>% of reporting of student screening and referral data at the HAAD electronic system.</p> <p>(If system integration is done)</p> <p>% of students screening and referral data will be automatically 100% reported</p>	98%	100%
8.	Reporting	<p>One Annual report should be provided on the screening results. This should include;</p> <ol style="list-style-type: none"> <li>1. All the mentioned KPI parameters from point 1 to 7) - per student age and grade and total.</li> <li>2. Disease prevalence for the identified issues per student age and grade and total. <ol style="list-style-type: none"> <li>a. Specify the issues identified in vision screening.</li> <li>b. Specify the issues identified in Hearing screening.</li> <li>c. Specify the issues identified in Scoliosis screening.</li> <li>d. Specify the issues identified in CBC screening.</li> <li>e. Specify the issues identified in Blood pressure</li> <li>f. Specify the issues identified in BMI screening.</li> </ol> </li> </ol>	One report per academic year	One report per academic year

9	Reporting	One annual report should be provided for the infectious diseases' cases reported by the school clinic to HAAD		
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Table 19: School Screening KPIs

### 5.1.8.6 Vaccination Service KPIs

	KPI	Definition	Acceptable level	Target level
1	Vaccination Coverage	% of eligible students for vaccination who have received required vaccines according to HAAD vaccination program.	>98%	100%
2	Vaccination History	% of students with up-to-date vaccination.  This includes revising the previous vaccination history and ensure up-to-date vaccination status.	>95%	100%
3	Documentation	% of completeness of students' vaccination records on school medical file.  This includes obtaining copy of students' vaccination cards.	>98%	100%

4	Notifications	<p>% of reported vaccines provided at schools through Immunization Information System (IIS).</p> <p>% of reported Adverse Events Following Immunizations (AEFI) for the vaccines provided at school setting.</p>	99%	100%
5	Vaccination Refusal	<p>% of completed refusal reports compared to unvaccinated students.</p>	>98%	100%

Table 20: Vaccination Service KPIs

**5.2 Program Implementation:**

For implementation, the improved comprehensive screening program is going to be publicly tendered giving all health care providers in the public and private sectors the chance to compete on offering the best implementation plan and the best cost. There may be different models of implementation, for example several providers may decide to venture jointly to deliver the required scope by HAAD in all regions, or different providers may bid to cover certain geographic areas depending on their capacity.

Expected implementation date is the academic year 2020-2021



### **5.3 HAAD weight management program for overweight and obese children and adolescents:**

In December 2018 our team published a new HAAD weight management program for overweight and obese children and adolescents, targeting children between 2-18 years of age.

The services will be piloted in 5 clinics in Abu Dhabi for the period of two years starting from June 2020.

The program is a multi-disciplinary family-centered program that, at a basic level, includes multicomponent lifestyle interventions (diet, exercise and behavioral therapy); it can also include pharmacological interventions and surgical intervention when needed.

The figure 14 below describes the service delivery model as extracted from the official HAAD website (HAAD.2018).

[file:///C:/Users/tab/Downloads/Weight%20Management%20Program%20for%20Overweight%20and%20Obese%20Children%20\(1\).pdf](file:///C:/Users/tab/Downloads/Weight%20Management%20Program%20for%20Overweight%20and%20Obese%20Children%20(1).pdf) , and as depicted by the weight management standard for overweight and obese children published end of 2018.

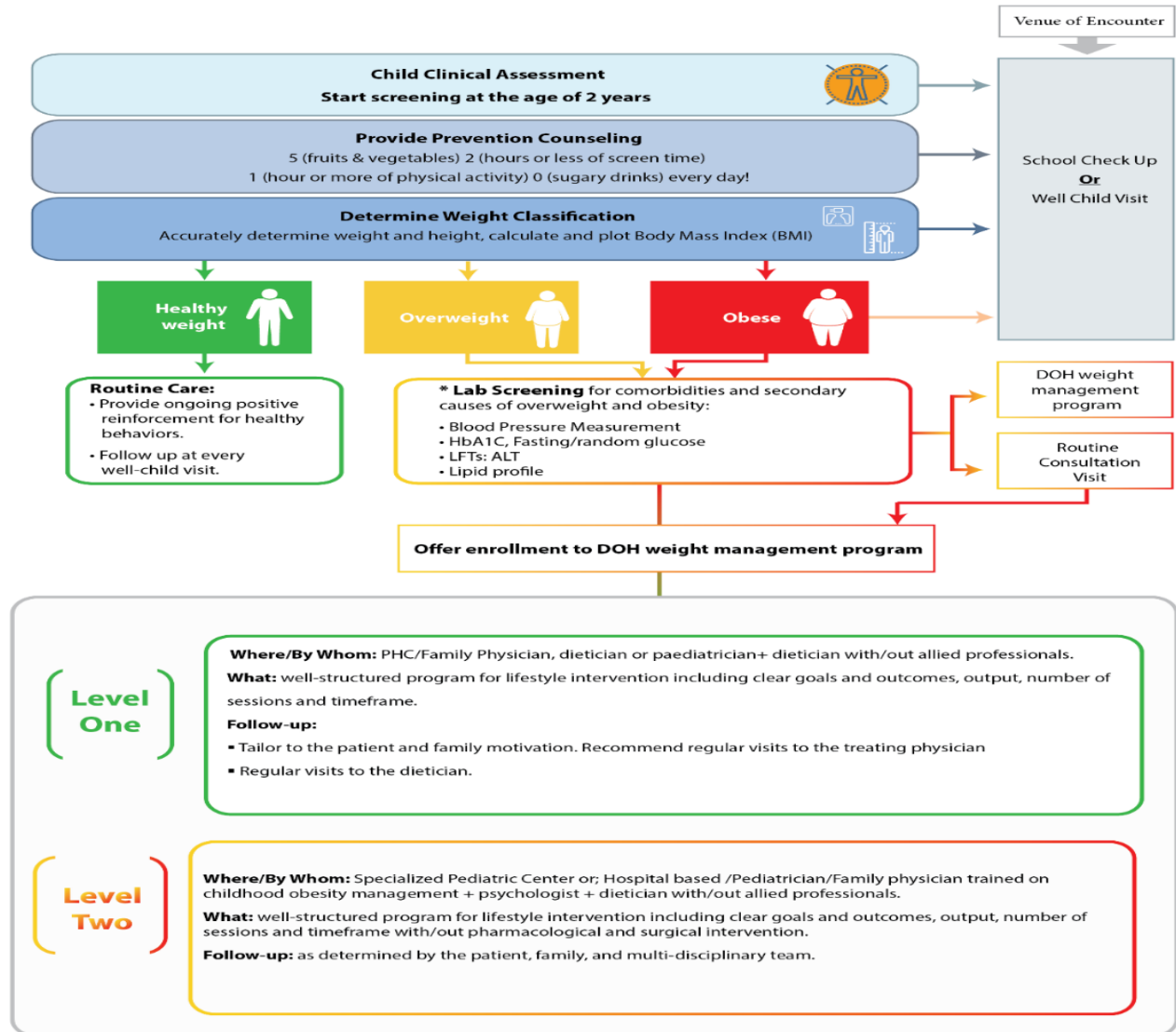


Figure 14: Service Delivery Model

## **5.4 Research and innovation:**

I am also proposing the establishment of a scientific board for the school screening program; this board will be responsible for continuous evaluation of the program in light of new scientific advances. This group will also serve as a catalyst for school health related research projects in collaboration with Academia locally and internationally.

A special sub-committee will also be established to look into innovative programs and tools that can be used to improve prevention, detection and management of conditions related to the main components of school health and in improving the health of the children and youth in general. Another subcommittee shall focus on initiating cost effectiveness research and help us build evidence to advocate for universal health coverage for all children and help us sustain funding for the program.

## **5.5 Next steps**

After the defense, the proposed changes and improvements in the comprehensive school screening program will be raised officially to the senior leadership of the Health Authority of Abu Dhabi and the other stakeholders like AD Education Council and Ministry of Education.

The agreed upon documents will have to be presented to the AD Executive office for final approvals, financial model and budgetary support. A provider or more will be contracted to implement and deliver the approved screening.

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## **Vita**

### ***Dr. Omniyat Mohammed Al-Hajeri***



#### **Personal Statement:**

I have been raised and trained to seek excellence in every possible way not forgetting to look after the needs of my team and my people; sparing no time or effort in doing so.. I am looking for a new challenge that allows me to use all the skills I accumulated during my life journey to systematically transform the future to a better place for all people targeted.

#### **Board memberships & clinic duties:**

- *Consultant Diabetes, Endocrinology and Metabolic Diseases 2008 to date*
- *Assistant Professor of Internal Medicine, University of Medicine and Health Sciences, UAE University, 2011 till 2014*
- *Member of the Board of Directors of Sheikha Fatima Bint Mubarak Academy for Women's Sports. July 2012 to date*

- *Member of the Executive Committee of the Waste Management Center 2013 till 2015*
- *Member of the Board of Directors of Abu Dhabi Media Company 2014 for till 2017*
- *Member of the Board of Directors of Abu Dhabi National Exhibitions Company 2016 and till Nov 2019.*

### **Education:**

- **DrPH in Health Care Policy and Management , The Bloomberg School of Public Health- Johns Hopkins University, May 2011 ongoing.**
- **Masters of strategic and security studies , the National Defense College UAE, 2015**
- **MPH in Health Care Management and Leadership, The Bloomberg School of Public Health- Johns Hopkins University, May 2011**
- **Membership of the Royal College of Physicians (IRE) 2001 ( equivalent to PHD in medicine as certified by the MOH at that time)**
- **MB, BCH, BAO, LRCPS & NUI** Obtained from the Royal College of Surgeons in Ireland -May 1999.“came **first** in a class of 160 medical students”
- **Secondary school** 1992 – came **first** on the science section in UAE

### **LANGUAGES**

- Excellent: Arabic (mother tongue), English

### **Medals and Prizes**

I was honored to receive the Medal of His Highness the President of the Executive Council for the category of Executive Director (Abu Dhabi Award for Excellence in Government Performance in the third quarter 2013).

### **In addition to :**

- 25 Academic honors and medals and first place in almost every course during medical school (enclosed transcript for results),  
Many awards in Ireland including the Supreme Council of the Irish Royal College:
  - Evatt memorial medal in anatomy, 1995
  - Norman Rae gold medal in biochemistry, 1995
  - Barker dissection prize in anatomy, 1996
  - Stoney memorial medal in anatomy , 1996
  - Pharmacia and UpJohn prize in biochemistry, 1996
  - Quinn prize in ophthalmology, 1997
  - Mr. John McAuliffe-Curtin gold medal in oto-rhino-laryngology, 1998
  - Sir William Wheeler memorial medal in medicine and surgery, 1999
  - Ruben Harvey’s medal , 1999

- Leonard Abbarahamson gold medal for medicine, 1999
- Lyon medal in surgery, 1999
- McDonnell Hospital prize for medicine and surgery, 1999
- Desmond Murray Council prize, 1999
  
- Sheikh Hamdan Award for Excellence in Science (PHD degree in Medicine 2002)
- I was a main author of a review book on Surgery and model answers for surgery exam questions for Medical Students which is being used and reprinted in Royal College of Surgeons in Ireland from 2000
- Elected member of the Delta Omega Honor Society- Johns Hopkins Bloomberg school of Public Health May 2011 to date (US national honor society that aims to encourage excellence in research, scholarship and practice of public health and to recognize attainments in the field of public health).
- Abu Dhabi Government Leadership Training Programs:  
I have had the opportunity to get a number of short and medium training programs with the best global training providers such as (Johns Hopkins, Harvard, INSEAD, Oxford Business school, Cambridge Leadership Associates and others)

### **Leadership training:**

Had the opportunity to train on the hands of some of the best coaches in leadership through my MPH-DrPH program with Johns Hopkins but also through the Abu Dhabi Government Leadership development program with coaches from Harvard , INSEAD, Oxford Business school, Cambridge Leadership Associates and others, with excellent Center of Excellence formal evaluation scores.

### **Clinical and Academic Experience:**

*License No GD6367 as Consultant Endocrinology, Diabetes and Metabolic Disease since Feb 2008*

- **July 99- June 00** House officer, Beaumont Hospital (tertiary referral center and one of the main teaching hospitals in Dublin the Irish capital).
- **June 00 – Sep 01** Senior House Officer (Medical SHO Rotation for 2 years), Beaumont Hospital
- **Sep 01- Feb 02** registrar internal medicine and endocrinology at (SKMC) Sheikh Khalifa Medical City in Abu-Dhabi ( I was running the outpatient endocrinology clinic and all in patients consultations for almost a full year in the absence of other specialized Endocrinology colleagues till other colleagues joined the service)
- **Feb 02 – July 08** Specialist Endocrinologist at (SKMC) the Sheikh Khalifa Medical Centre

- **Feb 08 till 2017 Consultant Endocrinology, diabetes and metabolism in the Medical center of innovation and excellence in Abu Dhabi and then in the Prince Medical Center**
- **March 2017 till date Consultant Endocrinology, diabetes and metabolism in the Marina Health Promotion Center (Burjeel Hospital)**

***Teaching:***

1. I worked in Beaumont Hospital, which is one of major medical centers in Ireland and the main teaching hospital for the Royal college of Surgeons. I had the chance to participate in both the bedside clinical teaching and the formal lecturing to 3<sup>rd</sup> and 4<sup>th</sup> and the final medical year students attached to Beaumont Hospital.
2. I also had the chance to help in organizing the clinical cases for the part 2 membership exams of the RCPI.
3. I was one of the main Editors of a book published by the Royal College of Surgeons as an ideal reference for final year medical students titled : “Final Surgery Exam Answers” which provides referenced and updated best answers for the final written exam question papers over ten years periods ( 1990-2000 ). The book was reprinted for several years.

***Continuous Medical Education:***

1. In the UAE I had the chance to be one of the three establishing members of the **Diabetes Education and Study Group (DESG-AD)**,DESG-AD started organizing **Therapeutic Patient Education (TPE)**program started in May 2002 and is conducted in accordance with the curriculum of DESG International and in partnership with Servier UAE. Since its start, we have managed to deliver the program to more than 70 healthcare providers at the primary care level in Abu-Dhabi.
2. Since Oct 01 I had the chance to participate in several Continuous Medical Education Seminars and Symposia both as an organizer and a speaker.
3. Was a member of the National Diabetes group-a Ministry of Health committee –that looks after developing a strategy for prevention and care of diabetes in the UAE and also the Abu-Dhabi Diabetes committee-a similar committee that works under the umbrella of the GAHS for developing the Abu-Dhabi strategy for the prevention and treatment of Diabetes

***Graduate Medical Training and development:***

1. Supervised the recruitment of the first patch of local interns and residents employed by the GAHS ( started their training post in the GAHS hospitals in July 2004).
2. Was a member of a committee formed to set the GAHS policies regarding sponsorship of post graduate students and the required medical specialization fields to meet our future needs in Abu-Dhabi hospitals..
3. Member of AHAC- Academic and Health care Advisory Council.
4. Over seen the first residents matching project in the Emirate of Abu Dhabi in 2010 (TANSEEQ Project)



## **PROFESSIONAL ADMINSTRATIVE EXPERIENCE:**

### ***1-Administration and Management:***

- **Manager Community Health Department- AD Public Health Center Nov 2019 till date**
- **Director of Public Health Division- Department of Health AD May 2012 till Nov 2019**
- **Manager Non Communicable Disease and then Manager Health promotion and Surveillance- HAAD July 2011 to May 2012**
- **Manager Health Professionals Licensing** (this department included health professionals **licensing, credentialing, examination, continuous professional development and post graduate education**) – **HAAD 2007- 2011**
- **Feb 02- June 06** working as a part time **recruitment consultant** with the **Human Resources** division in the General Authority for Health Services in the Emirate of Abu-Dhabi and covered in addition the duties of the exam and licensure section head since 2004 (please see details below)
- **June 06- July 07** part time **consultant to health policy and regulation** in the GAHS, project manager for third party test development and computerized exam delivery for health professionals licensing.

### **Areas of Expertise:**

#### ***a- Public Health contributions:***

*The most important achievements in which I had a direct executive role and not just a supervisory role or coordination from the beginning of my work as Director of Public Health Division May 2012:*

1. Calorie display on the food outlets and sugar reduction of 20% over 5 years initiatives ( pending Executive committee approval of the pilot , planned launch Dec 2019)
2. The step wise launch of the AD Comprehensive screening program for adults . 2019.
3. The Supermarket of the future, piloted with Lulu Hypermarket 2018.
4. Launch of the AD Chronic Disease registries project 2017 and on going ( started with diabetes registry and recently launched the cardiovascular disease registry, four more registers to follow )
5. Created and launched the First Public health Ambassador Program in UAE in the emirate of AD in 2015 and also launched its first English version in 2019 in support of the year of tolerance.
6. Develop the mechanism followed by the PH management team using a new model that enhances the leadership role of departmental managers and section heads based on four pillars, including: Strengthening the system of consultation based on scientific evidence as the basis for strategic decision-making, inspiring creativity,

- relying on encouraging the team work spirit among the team members and supporting the spirit of cooperation with strategic partners with all relevant external bodies, monitoring performance and output control
7. Building team spirit and gaining the trust and respect of more than 80 employees from more than seven different nationalities working in the Public Health Division.
  8. Launching “Enaya program” under the patronage of Her Highness Sheikha Fatima Bint Mubarak, which is an integrated mother and child care program. It includes many stages and various subprograms, including the integrated system of policy and standards development, training and rehabilitation of health service providers
  9. Launching “Hemaya program” under the patronage of Her Highness Sheikha Fatima Bint Mubarak, which is an integrated program to reduce injuries started with:
    - Continuation of ‘Safety in the Heat’
    - Launch of the Injury and Poisoning Notification and Surveillance system (IPNS), the first of its kind in the Middle East
    - Continuation of “Height Aware Program”
    - Awareness campaign on the use of car seats for children
 December 2012 “Car seat”, the program won two prizes in the Gulf Traffic Award in 2013
  10. Launch of the adult vaccination program 2012 May
  11. Adding rotavirus vaccine for children in July 2013
  12. Launch of the “Abu Dhabi Says no to Tobacco” June 2012, 2013, 2014, Ramadan 2012, 2013 and 2014, despite the limited budget available to invest the partnership with Abu Dhabi Media and get special discounts.
  13. Launch of the community awareness campaign “Weqaya Program” second wave November 2012
  14. Develop a clear plan for the activities of the Public Health Division and its programs with clear performance indicators and means of evaluation, including evaluation of the program outputs and the opinion of the target groups for 2013, especially programs under the patronage of Her Highness Sheikha Fatimah Bint Mubarak
  15. Identify possible partnerships with relevant stakeholders for each of the core public health programs to maximize optimum utilization and integration for 2013 at the local, federal, and global levels
  16. Representing the Health Authority in most of the health media programs, events and awareness campaigns
  17. Launching the Cancer Data Registry in October 2012, and the early cancer screening record.
  18. Launch a unified Cancer Prevention Campaign for three types of cancer (breast, cervical, colorectal) to unify the efforts and take advantage of all the possibilities available, in addition to the lung cancer which was added to the group in October 2013.

19. Expanding the scope of Weqaya services to the western region, house visits, making service available to Emiratis “Thiqa” card holders, mobile units to access remote areas ,provide health examination at workplace
20. Launching the slogan of “Weqaya” on healthy foods in restaurants, cafeterias and food outlets in 2013 to promote healthy options in cooperation with the Abu Dhabi Food Control Authority after the success of the pilot program
21. the completion of the project of evaluating the public health services compared to the global level using the assessment tool adopted by the US Center for Disease Control to develop an integrated plan to fill the gaps identified with clear projects and determine the budget from 2014-2016 and link it to the strategic plan of the Health Authority 2014 – 2018 and the revaluation project in 2017

And before being the director of public Health :

Many public health programs that I contributed to during my work as Dept. Manager of Community Health and Surveillance, including

- School Health Challenge in collaboration with the Abu Dhabi Education Council 2012
- School programs for medical tests and vaccinations for school students, in addition to the collection and analysis of data for more than 80,000 students in cooperation with the SEHA and Abu Dhabi Education Council 2011-2012
- Pilot program for launching the slogan of “Weqaya” on healthy foods in restaurants, cafeterias and food outlets to promote healthy options in cooperation with the Abu Dhabi Food Control Authority 2011-2012
- Completion of the second review project for food standards in school cafeterias in cooperation with the Abu Dhabi Education Council and in participation with the Ministry of Education and the Ministry of Health & Prevention
- Oral Health - Abu Dhabi Smile program, in cooperation with Abu Dhabi Education Council 2011-2012
- Develop the plan of “Weqaya” program in the workplace 2012
- Planning and implementing many anti-smoking training programs targeting different groups of audiences, including student leaders in schools, universities, religious leaders, doctors and pharmacists for education, to promote health awareness and help to quit smoking
- Safety in the Heat program 2011
- Height Aware Program 2012 (Winner of the IOSH 2013 Partnership Award ‘an International award in Occupational Health field

**b- Innovation:**

I enjoy starting things from scratch and spinning them through.

1-First to start examination for doctors in the emirate of AD 2002.

2-Supervised the recruitment and training of the first patch of interns in HAAD.

- 3-initiated the first post graduate education section in HAAD.
- 4-initiated the first CME/CPD section in HAAD.
- 5-proposed and started the first Health professional licensing Department in HAAD.
- 6- started the first committee for breast cancer control in AD 2004 before even joining public health.
- 7-lead the project of licensing automation.
- 8-lead the project of on line examinations and expanded that to 17 overseas centers before I left Health professionals licensing.
- 9-founding member of the AD Diabetes Education Group.
- 10- initiated multiple public health programs from scratch the highlights are : introducing the Nudge approach by adopting and culturally customizing some interesting international practices like starting the wegaya food logo in 2012 on food menus for adults and kids and also pre packed food.. and more recently piloting the supermarket of the future lay out in 2018.
- 11-started the Public health ambassadors program for adults, and currently working on starting the Public Health Champions program for children.
- 12- the Healthy champions initiative with SHF where we managed to combine technology with physical activity and team work for children to improve health outcomes and knowledge pilot started in 2018 and is still rotating the schools and looking into expanding it.
- 13- working currently on AI augmented , virtual reality assisted and fully automated screening experience for adults prototype model .
- 14-founding member of the UAE Public Health Association, non for profit organization that is established to strengthen public health across the UAE.

### ***c- Research:***

I am currently the co chair of the AD health research committee.  
And had the opportunity to lead the Research section in HAAD regulating the medical research across the health sector in AD from 2012 till 2015

lead the Morbidity and mortality task force for HAAD since 2012 till date , where we look at all available morbidity and mortality data periodically and analyze trends and highlight risk areas and initiate projects to improve the community outcomes. ( one of the major projects that we initiated through this was improving the maternal and child care which lead to reduction of infant mortality rate from 8 to 6.4% ).

I was also a member of the AD Academic Research Council from 2012 till 2014.

Worked with ADEK on the Medical research council model as part of the AD research council lead by ADEK in 2013.

I also had my share of experience as an investigator in both clinical research and applied research fields.

- Aging and physiological functioning 1996
- The Battle against addiction, 1997

- Prevention in general practice, 1998
- Intra-uterine growth retardation, 1998
- Acute childhood leukemia, 1999
- Interventional radiology, 1999
- Cutaneous manifestations of new anti-epileptics, 2001 (review article)
- Participated in multiple clinical studies including :
  1. study titled : NSAIDS, safety patient awareness and safer alternative, 2001 ,
  2. Study HOE 901/3504 insulin Glargine “A phase IIIb/IV, multinational, multicenter, randomized open study to establish the optimal method for initiating and maintaining Lantus (insulin glargine) therapy based on a comparison of two treatment algorithms in subjects with type 2 diabetes mellitus” 2002-2003.
  3. Study HOE 901/3505 insulin Glargine “A phase IIIb/IV, multinational, multicenter, randomized open study to establish the optimal method for initiating and maintaining Lantus (insulin glargine) therapy based on a comparison of two treatment algorithms in subjects with type 1 diabetes mellitus” 2002-2003.
  4. An open-label, randomized, multi-center, phase IIIb, parallel group study to compare the efficacy and safety of rosuvastatin and atorvastatin in subjects with type IIa and IIb hypercholesterolemia (DISCOVERY-ALPHA).

last three studies has been published combined in the Diabetes Obesity and metabolism journal May 2008 titled: initiation of insulin glargine therapy in type 2 diabetes subjects sub optimally controlled on oral diabetic agents: results from the AT.LANTUS trial.

5- master thesis research : Cardiovascular risk factors in Adult UAE nationals in the emirate of AD: the challenges and opportunities. 2011 Johns Hopkins University, The Bloomberg School of Public Health.

6- master thesis research: Screening and preventative services targeting the National Service recruits. 2014 the National defense College UAE.

7- DrPH thesis research : Comprehensive School Screening in AD : 2015 to 2017 trends and future innovation.

### ***d-Patient Education and Health Promotion:***

I have designed and delivered many public health programs and educational material and lectures related to healthy life style, obesity and diabetes care were presented to the public in simple Arabic, in relation to the health promotion activities of the UAE Red Crescent and the Abu-Dhabi women organizations.

I have prepared **Patient education booklets** discussing Ramadan and diabetes and the importance of home glucose monitoring in both Arabic and English published and distributed through SKMC and drug companies in their health promotion campaigns. Also several educational reviews about obesity, diabetes and fasting and thyroid disease were published in local magazines and newspapers.

I also Presented as part of the diabetes care team in SKMC- **two Educational videos** discussing facts about type I and Type II diabetes

### **e- Strategy, Health policy, licensing and regulations:**

1. lead the development of Public Health strategy as part of the Health sector strategy 2012 , 2014 , and 2017
2. participated in the working and technical groups developing the People of Determination and the Early Childhood strategies.
3. worked on a National level on the development of the National women mental health strategy, maternal and childhood strategy, national plan for reducing the burden of cancer, the national plan for reducing the burden of cardiovascular disease, the national plan for reducing childhood obesity with their related strategies.
4. Member of the **Human Resources committee** for the development and review of hospital related policies and procedures.( 2004 –2005 )
5. **Proposed and established and worked as the acting head for the Abu-Dhabi exam and licensure section for all health related professions end of 2004.** The section has supported the new **Medical Recruitment Division** in the GAHS through building a **current and comprehensive data base** of evaluated candidates that meet the GAHS requirements in different health related professions .before the de-centralization of recruitment in 2006. **The section evolved to the current Health professionals licensing department.**
6. Was responsible for the review and update of the **PQR the Personnel Qualification Requirements that serves as the basis for the credentialing and evaluation of all health professionals working in the Emirate of Abu Dhabi resulting in PQR 8 and the soon to be announced latest update PQR9.**
7. **Lead the project of computer based testing resulting** in the launch of computer based testing starting with nursing exam in HAAD test center. Jan 2009. And the activation of 17 International Test Centers to deliver HAAD electronic exams (Egypt, India, Jordan, KSA, and Philippine) then added centers in Lebanon, Korea, South Africa, and finally Frankfort.
8. **Drafted multiple policies** related to my current appointment as a Manager for Health Professionals Licensing Department covering licensing, examination, credentialing CME/CPD and post graduate education.
9. **was a Member** of HAAD Licensing committee, private sector coordination committee and HAAD **Policy Advisory Committee.**
10. Deputy Representative to the National committee reviewing the medical liability law and the laws governing the health professionals practice within UAE.
11. Member of the AHAC- Academic and Health care Advisory Council.
12. was founding member of **the first national committee for breast cancer control in UAE in 2005-2006 in partnership with the US Suzan J Komen Foundation and the first AD task force for cancer prevention** and proposed the first **cancer section in HAAD in 2006** that was then the nucleus for the **Public Health Division in the authority announced in 2007**
- 13- **Drafted multiple research regulatory policies** in my role as chair of the AD research committee and director of Public Health to whom the research section reported. And

contributed to the Health research strategy and road map in 2019 that is currently awaiting formal approval.

***f- Emergency preparedness:***

Had the privilege of being ***the incident commander in the MERS-CoV outbreak in Abu Dhabi in 2013 and the incident commander in the suspected first suspected case of Ebola in UAE in 2014.***

I had the privilege of drafting the first comprehensive communication plan for the MERS-CoV emergency which served as the base for the national plan.

I also had the privilege to draft the emergency preparedness plan for Ebola outbreak in AD which also served as the base for the National plan.

Serve as a member of the Emergency Command team of the Department of health and the deputy incident commander till now.

***g- Human Recourses and Recruitment:***

I was involved with medical recruitment for the **General Authority For Health Services in Abu-Dhabi** -which is the main governmental body that deliver health services to the population of the Emirate of Abu-Dhabi since February 2002, my duties included the recruitment and evaluation of doctors to be employed in the hospitals of the Emirate of Abu-Dhabi. ***The main projects I worked on included:***

**Al-Rahba Hospital:**

142 beds hospital that deliver services in the fields of general medicine ,surgery, pediatrics, obstetrics and gynecology , ENT, intensive care and emergency medicine. I **was directly responsible for:**

reviewing the medical manpower requirements, cost/budgetary implications, recruitment and evaluation-with a team of three coordinators- of the medical and technical staff except nursing. A total of 84 positions to be filled. This included( pre-screening and short listing candidates, negotiating employment offers, updating interview forms to target required competencies, organizing interviews and selecting interview panels, participating in most personal and phone interviews representing human resources, following up the usual recruitment issues including security clearance, ticketing and accommodating candidates during interviews and at the first week of arrival to assume duties).

**Al-Wagan Hospital:**

**Responsibilities:** Reviewing the medical and technical manpower requirements  
Reviewing cost and budgetary implications. Recruitment process handed over to Tawam Hospital after the initial screening of CVs.

**Al-Khaleej and Bateen primary health care clinics:**

**Responsibilities:** Reviewing the medical and technical requirements. Recruitment process handed over to SKMC .

**Liwa hospital: (active project )**

50 beds hospital, delivers emergency and primary health care services to families residing in Liwa (the western region). **Responsibilities:** review and adjustment of cost effectiveness, organizational structure and manpower studies prepared by the research and development section. Started prescreening and evaluating medical staff and nursing applications, interview panels formed and actual interviews organized for next week, pharmacists and technical staff in laboratories, radiology and physiotherapy are to follow.

**Relevant and Current Committees and working groups:**

Early Childhood Development committee member.

People of Determination strategy development technical committee member.

Victims Of Abuse Steering committee member.

Women Mental Health National Committee member.

Diabetes National Committee member.

National committee for treatment , rehabilitation and community re integration committee member.

The national committee for maternal and child care member

National committees for government accelerators multiple committees including Cardiovascular disease and cancer reduction committee, Healthy life style committee , smoking control committee, childhood obesity control committee,

Co chair of the AD Health Research committee.

Chair of AD Morbidity and Mortality task force.

Chair of the Childhood obesity scientific committee.

Chair of the selection committee for the Centers of Excellence advisory committees.

**Voluntary and community work:**

Ran a Charity Clinic for Minorities in Dublin between 1999 and 2001.

I am a **volunteer** in **the UAE Red Crescent** and had the chance to represent it in several workshops in the country and abroad, I was also a member of the national committee for the prevention of AIDS and blood borne diseases in cooperation with **International Red Cross and Red Crescent** and a member in their committee for local medical aid.

And I had the privilege to participate in the **Zayed project to treat and look after the Iraqi war injured victims invited to receive full medical treatment in UAE.**



### **Hobbies and General Interests:**

I enjoy reading both Arabic and English literature and poetry.

I also enjoy writing novels, short stories and poetry. I had several of those published in local newspapers and magazines in UAE and several other Gulf and Arabian countries.

I worked as a TV presenter for many children programs in the UAE and also took part in Adult scientific Programs and news reading.

### **References:**

Available upon request.